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QUARTERLY MAGAZINE

Many Facets of Mt. Fuji

Japan's Passenger and Sports Cars

1970·VOL.8·NO.1





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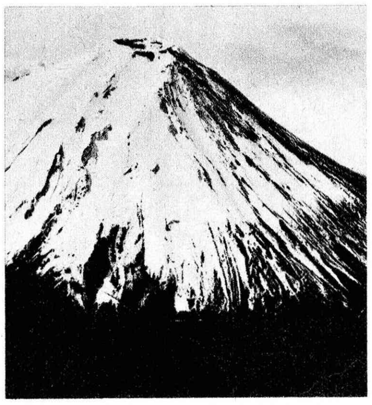
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VOL. 8, NO. 1, 1970

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Cover photo: Aerial view of Mt. Fuji in early winter. Photo by Takanori Ogawa.

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Japanese Currents

IMPERIAL FAMILY

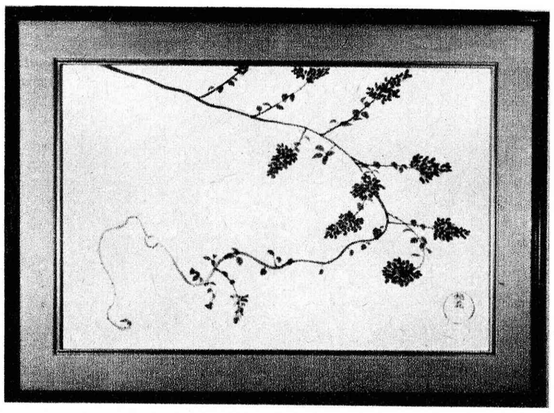
Their Majesties' Books Published



Recently, books authored by Their Imperial Majesties the Emperor and Empress were published in succession.

The Emperor's work, "Some Hydroids of the Amakusa Islands" represents a scientific classification of hydroids, a form of marine life in the Amakusa region, which were presented by Kyushu University and the Coastal Experimental Station of Kumamoto University during his trips to Kyushu. The Emperor has long been known as a devoted biologist. Among the hydroids mentioned in the book are those species newly discovered by him, such as "Amakusa Umikoppu" (Clytia delicatula var. amakusana) and "Heritsuki-sakazuki" (Orthopyxis australis—Stechow—). The book is available in two editions—a 38-page English-language version and a 60-page one with both Japanese and English texts, and 500 copies of each have been printed. But the work is not for sale, the copies being donated to libraries, universities, scholars and research institutes both at home and abroad. Above photo: The Emperor is also known for his earnest study of botany as well as zoology. The Empress is a ready coopeprator.

Meanwhile, the Empress has published the second collection of her paintings entitled "Kimpo Shu" for sale to the general public. In line with her wish, royalties on the book will be donated to the Japan Red Cross for use in social welfare projects. In her school days, Her Majesty learned Western-style painting. After marriage, she started taking lessons in Japanese-style painting. At present, she is studying under Seison Maeda, a noted Japanese-style painter, and enters her works in the annual art exhibition of the Imperial Household Agency. Her painting is already considered to be more than just an amateur's hobby, but few of her pictures have so far been seen by the public. Therefore, this is the first time for her paintings to be widely introduced to the general public. (Published by the Asahi Shimbun; price: 5,000 yen). Photo below shows one of Empress' Japanese-style paintings.



EXPO '70

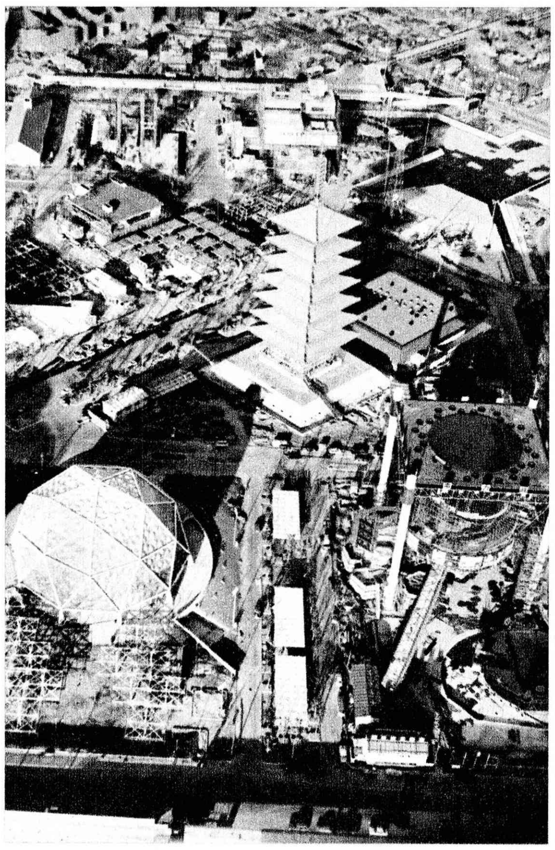
Preparations for EXPO in Homestretch

With only a couple of months to go before the start of the Japan World Exposition, Osaka, 1970 (EXPO '70), preparations are making smooth headway amid a fast-mounting EXPO mood.

According to a recently announced program of the opening ceremony, scheduled for March 14, it will likely be more of a show than a mere ceremony. The ceremony will take place for one hour from 11 a.m. March 14 in the presence of the Emperor and Empress, and the Crown Prince and Princess. Its program features a rich Japanese touch—for instance, performance of *gagaku* (ancient court music), *shishimai* (lion dance) and *mikoshi* (portable shrine) procession. Meanwhile, an illuminating device attached to a big roof and a mammoth robot 14 meters high will provide a symphony of colors and sounds to work up an atmosphere of festivity. In addition, a shower of scented confetti will descend from the ceiling. Thus the ceremony will probably become the most gorgeous in the history of world exposition spanning more than a century.

Meanwhile, at the fair site in the Senri Hills, Osaka Prefecture, elaborate structures are going up one after another. Their beautiful shapes—ranging from the "Seven-Storied Pagoda" typical of Japan's traditional architecture to the "Air Building," a huge dome formed by inflated vinyl tubes arranged side by side, representing the most drastic of modern architectural ideas—will never fail to fascinate all visitors to the exposition.

In addition, the world's largest roof weighing 480 tons has already been lifted to a height of 30 meters at the Festival Plaza, a major attraction of EXPO '70. An automatic monorail and the air-conditioned "Moving Pavement" are also nearing completion. EXPO '70 is expected to attract about 50 million visitors, both Japanese and foreign. It will thus turn out a spectacular "dream festival" adorning the advent of the 1970's.



Japanese Currents

CHILDREN

Home Life of Primary School Children in Tokyo

Primary school children in Tokyo "spend more than two hours a day in watching TV or listening to radio," while earmarking only about an hour for study. "More than half of them are eagerly taking lessons" in various arts and they receive a "monthly allowance of 400 to 500 yen." These and other facts about the home life of primary school pupils were recently published in a survey by the Metropolitan Board of Education. The survey, covering 9,700 pupils of 48 schools in Tokyo and as many parents, surveyed the children's life in their homes during last year. High points of the survey are:

Use of time—on the average, the longest period of two hours and 16 minutes was spent in watching TV and listening to radio, followed by one hour and 11 minutes for "playing outdoors," and one hour and eight minutes for "study," while the reading books and newspapers took up 27 and various lessons 21 minutes. The higher the parents' scholastic level, the longer was their children's study time and the shorter that for television and radio.

Educational Expenses—Parents paid an annual average of 76,735 yen per child (monthly average: 6,395 yen) for their children's study, cultural training, sports, etc., excluding direct payments to schools and PTA membership fees. This was as much as 18,000 yen more than that for junior high school students in Tokyo covered in a similar survey published last year (1,500 yen more on the monthly average). The biggest expense item was hobbies and recreation (18,831 yen), followed by the hiring of tutors, attendance at private schools and various lessons (18,211 yen) as well as disbursements for study, such as purchase of dictionaries and reference books (16,502 yen).

Home Education—More than half of the children or 54.3 per cent had study rooms and desks of their own, while 40.5 per cent had desks though having no private room. Only 3.8 per cent had neither. But, 20 per cent had tutors or attended private study schools. Among various lessons, calligraphy, piano and the abacus formed the "Top Three."

Parents' Attitude—Allowance was given on the basis of "fixed monthly sum" by the highest proportion—45.9 per cent—of the parents. The average monthly allowance was 400 to 500 yen. As for those giving "fixed weekly sums" as allowances, an overwhelmingly large proportion mentioned 100 to 200 yen. Regarding daily contact between parents and children, 93.1 per cent of the children had "dialogue" with their parents. But only one out of every 10 of these children mentioned their fathers as the other party in such dialogue.



Children and Biographies

An increasing number of junior and senior high school students is said to lack the desire to read books which are recommended them. On the other hand, those students who are not satisfied with given books have started to read others of their own choosing. Thus, it is said, reading among youngsters is now reaching to a turning point.

A recent survey on the reading habit of primary school children and junior and senior high school students, conducted by the Mainichi Shimbun, one of the biggest national newspapers, was focused on "biographies." The idea was to clarify those "great men" who influence the spiritual growth of children. The survey disclosed that the largest proportion of youngsters from primary to senior high schools said they were deeply impressed with the life of the late Dr. Hideyo Noguchi. About 80 per cent of the primary school pupils and junior high school students covered by the survey replied they had read biographies of this great bacteriologist. In the survey, Dr. Noguchi far outdistanced second-ranking Thomas Edison, who was mentioned by about 50 per cent.

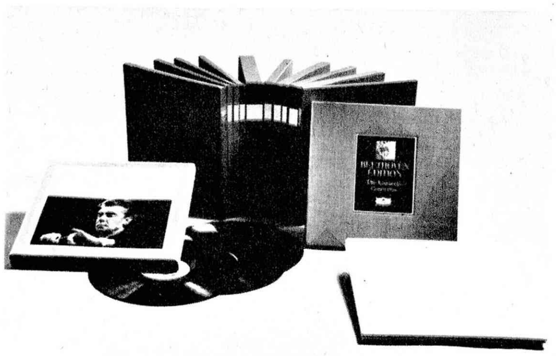
Dr. Noguchi was born to a poor farming family and at the age of two, he suffered a heavy burn on the left hand, which was thus crippled. Undaunted, however, he studied hard to become a physician. The story of his assiduous efforts never fails to impress children. Dr. Noguchi toured China, the United States and Denmark, while conducting intensive bacteriological studies. Finally he went to Africa to study yellow fever, but he himself was stricken with this dread disease and died. Thus his checkered career makes intriguing reading for youngsters. By contrast, it was revealed, biographies of Nobel prize-winning Dr. Hideki Yukawa, also a great scholar, are not so popular. This is probably because children are attracted more by the life full of vicissitudes suffered by Dr. Noguchi than by Dr. Yukawa's peaceful existence in a blessed environment. Even the present-day children, who are said overly protected by parents in an atmosphere of great affluence, cannot help applauding the impressive activities of the great bacteriologist.

Also popular among primary school pupils and junior and senior high school students are biographies of Edison, Abraham Lincoln, Madame Marie Curie, Hellen Keller, Albert Schweitzer, Toyotomi Hideyoshi (a feudal lord who conquered the entire country) and Soseki Natsume, the novelist. But by and large it seems, children are more impressed by biographies of foreigners than those of Japanese.

MUSIC

Complete Works of Beethoven to Be Put on Sale

The bicentennial of the birthday of Ludwig van Beethoven (December 16, 1770—March 26, 1827) falls this year. To mark the occasion, the complete works of the great composer,



perhaps the first in the world, will go on sale in Japan. Thus far, two firms—Toshiba Musical Industries Ltd. and Nippon Grammophone Co., Ltd.—have announced such plans, both comprising large numbers of stereo LP records covering almost all of Beethoven's principal works.

To be sold by Nippon Grammophone are 78 stereo LP records (30 cm) edited in 12 volumes, including almost all works of the German composer. The collection features a galaxy of the world's top musicians, such as conductors Herbert von Karajan, Karl Boehm and Richter, pianist Wilhelm Kempff. The price is 118,000 yen.

Toshiba's collection is made up of 87 30-cm LP records compiled in 24 volumes. It contains 220 out of about 350 works of Beethoven, systematically arranged in various sections, such as symphony, chamber, instrumental and vocal music.

The collections of the two firms include those works whose performance has seldom been recorded. Therefore, their presentation of the whole of the master composer's art will undoubtedly prove a big boon to music lovers.

RECREATION

Light Airplane Boom

"I have had enough of car driving. Now I want to fly up into the sky." Possibly for that reason, there has recently been a sharp increase in amateur pilots. According to a survey by the Civil Aviation Bureau of the Transport Ministry, about 1,000 persons took out pilot's licenses for light aircraft last year.

The Japan Flying League, which teaches piloting, says that its membership shot up from the 3,000 level in 1967 to more than 4,000 last year. It has 52 training planes, but they are not enuogh to handle all would-be pilots. So the league plans to acquire an additional 20 planes, including imported ones, this year.

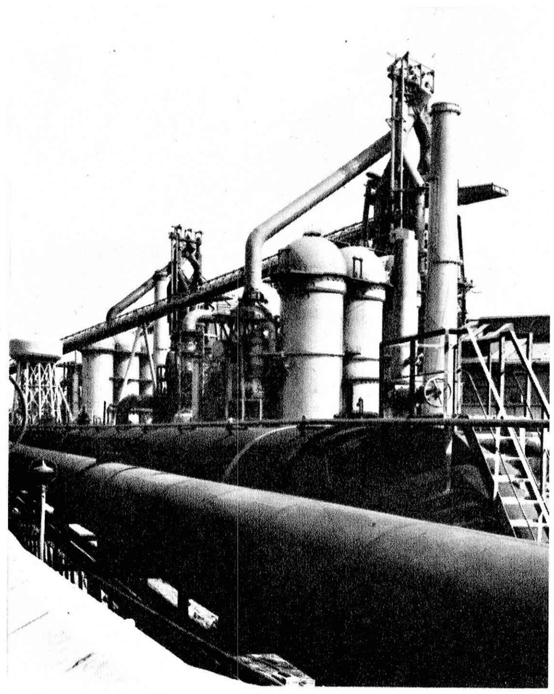
Meanwhile, a topnotch haberdashery maker has recently offered a light airplane, the FA-200 Aero Subaru of Fuji Heavy Industries Ltd. costing as much as seven million yen, in a raffle as part of a sales campaign. Moreover, it has even offered to pay for the winner's pilot training towards obtaining a flying license. But general interest in light aircraft has mounted so much that this unprecedented prize is not considered very extraordinary. In anticipation of a light plane boom, even a plane lease company has emerged for a long-term lease of planes to construction firms, realtors and individuals and related services, such as maintenance and safekeeping.



Fuji Heavy Industries, now the sole maker of full-fledged light aircraft, has decided to increase the production of its FA-200 planes (four-seaters available in two models—160-hp model; 5,980,000 yen and 180-hp model; 6,980,000 yen). Planes of this type have been turned out at a monthly rate of five units since 1967. This year, however, the production pace will be upped to eight units a month with the production target of 800 units by 1975. So it may be said that Japan has already entered upon the new age of a light airplane boom.

BUSINESS

The World's Largest Steelmaker



Late last October, a merger plan of Japan's "top two" steelmakers—the Yawata and Fuji Iron and Steel Companies—was formally approved, paving the way for the birth of a giant company, to be called the Shin Nihon Steel Corporation, on March 31 this year.

This represents the latest in a series of moves in Japan's industrial circles for corporate amalgamation or tie-up to survive intensified competition on the world market. After announcing their intentions to merge in April 1967, Yawata and Fuji started full preparations. But official approval was not easily obtainable in connection with the Anti-Monopoly Law, and finally, the merger plan was given a go-ahead on several conditions.

According to the rankings of world enterprises (outside the United States) by Fortune magazine in 1968, Yawata placed 29th and Fuji 36th in terms of sales. But the new firm to be formed through their amalgamation will rise to sixth position. It is of course the biggest enterprise in Japan.

As of 1967, the combined crude steel output of Yawata and Fuji stood at 24,400,000 tons or the third highest after the U.S. Steel and

Japanese Currents

British Steel. At the moment, however, their combined production, estimated at 32 million tons for 1968, is presumed to be the second highest in the world in view of the slackening growth of British Steel. Since a new blast furnace will go into operation after the merger, it will not be long before the new steel giant eclipses U.S. Steel to become the No. 1 steelmaker in the world.

New Information Service

Ricoh Co. has come up with a new information service called "Ricoh Patent File—Japanese Patents."

People today, it is said, live in a spate of information. And information about patents is also so variegated and involved that enterprises and patent offices are having much difficulty in managing voluminous information on patents and utility models. The new "Ricoh Patent File" is claimed to be most suitable for the settlement of such problems. For it consists of microfilms recording official bulletins on patents and utility models.

Under this information system, (1) microfilms containing the already published patents and utility models are available for sale, (2) patents and utility models to be published from now on can be supplied through semimonthly bulletins, and (3) official bulletins on patents are registered on magnetic tapes for computer. Microfilms are priced at about 350,000 yen per part, while the semimonthly bulletin service requires an advance payment of 50,000 yen. The magnetic tape service costs 3,600,000 yen a year.

NEW PRODUCTS

Color Video Player

Sony Corp. has developed a color video player and a small-sized video cassette capable of easily reproducing color TV programs at home. Dubbed "Canned Picture and Sound," the new devices will be marketed from later this year. The cassette are especially very small and light (12.5×20×3cm, 450g.), but can record movies, music, dramas or sports program for as long as one hour and a half.

The video player is connected with the antenna terminal of the home television receiver. All one has to do is to insert the video cassette into the player and push the button.

The video cassette can be easily started or stopped at any time. Since it has two sound tracks, stereophonic recording is possible. Moreover, by simply connecting the player with the antenna terminal of any color TV receiver, whether made by Sony or any other manufacturer, one can enjoy programs of the "Sony Color Video Player" on the TV screen.

In view of such characteristics, it is said, a new software company may emerge in the future to "can" various programs into the video cassettes for sale or lease.

The video player will sell for about 100,000 yen and the video cassette for 6,000 yen each. In addition, a recording adaptor for direct recording of TV programs will also be put on the market at 30,000 yen.

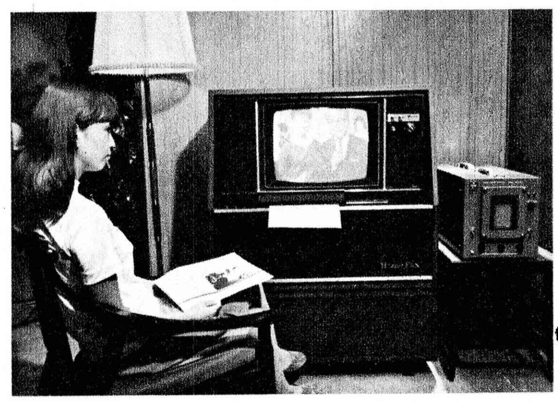


"Radio Wave Newspapers" Equipment for Home Use Developed

A new "radio wave newspaper" device, recently developed in Japan, has made it possible to read printed news directly transmitted from a broadcasting station, while enjoying a television or radio program.

The inventor is Matsushita Electric Industrial Co., a representative light machinery maker and the newly developed facsimile receiving equipment, dubbed "Home Facsimile," is available in three types.

These represent a color TV set or FM radio with a built-in facsimile receiver. Under this



formula, the broadcasting station can transmit news and photos by utilizing radio waves carrying television or radio programs. Therefore, no exclusive radio wave for the facsimile is required.

At each home equipped with the new apparatus, facsimile radio waves are received and news articles are automatically printed. Moreover, the ordinary TV or radio broadcast is in no way affected, enabling the reader to enjoy TV or radio programs simultaneously.

The maker says that the price of the new "radio wave newspaper" equipment will drop to the level of ordinary color TV receivers once mass production begins.

The "radio wave newspaper" formula has for some time been engaging keen attention as a new means of mass communication combining the immediacy of radio-wave reporting and the recording characteristic of newspapers. In Japan, another new apparatus for the same purpose has been developed jointly by the Asahi Shimbun, one of the biggest national newspapers, and the Tokyo Shibaura Electric Co. (Toshiba). These inventions are being watched with deep interest as harbingers of a new era of "radio wave newspapers," in which news will be delivered directly to the homes of the general public by radio waves. (Photo shows TV Fax-H system of "Home Facsimile.")

New Automobile Safety Devices

Japanese automakers and electric apparatus manufacturers are now bent on developing new electronic devices to ensure the safety of automobiles. Typical of such devices are the electronic appliances successfully developed by Mitsubishi Electric Corp. recently,

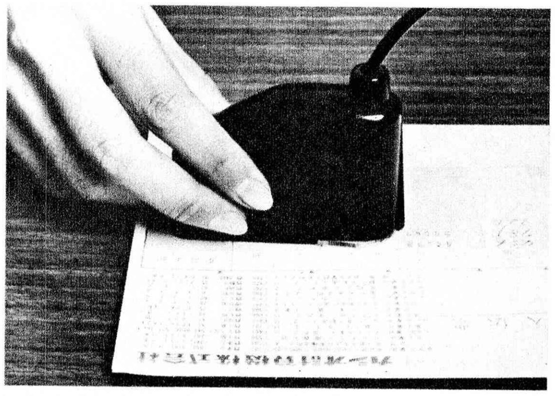
including the "Automatic Voice Warning Device."

The voice warning device literally gives a warning by voice when the driver commits an error—for instance, leaves the door ajar, excessive speed and failure to disengage the hand brake. That is, as soon as a detector notices an error, the device instantly and automatically selects an appropriate tape from a set of endless tapes with recorded warnings, and reproduces the chosen one.

The electronic devices invented by Mitsubishi Electric also include the "Supersonic Wave-Type Rear Obstacle Detector," which gives a warning to the driver on any obstacle unseen by him in the dead angles behind his car by detecting it with a supersonic wave. Also included is the "Body Antenna," which forms an integral part of the car body to enhance safety and increase speed by replacing the conventional pole antenna. Mitsubishi Electric's electronic devices, numbering five in all, are designed to enhance both safety and performance.

They differ in timing of sales and prices. But cars mounting the "Body Antenna" have already gone on sale, proving highly popular among drivers. The other devices will also be put on the market this spring, says the maker.

Automatic Electronic Pen



Casio Computer Co. will shortly put on sale a new Electro-Pen which can automatically print on, memo sheet or bill the result of calculation by an electronic desk computer.

Made of light plastic, the electronic pen is so small it can fit in the palm of the hand. It is connected with the computer by a cord, and all one has to do is to put the pen where he wishes to record the result of the computer's calculation, and then move it from right to left at an ordinary writing speed. It automatically prints the digits as indicated by the computer, thus replacing the human process of looking at the digits, memorizing and then writing them. The characteristic of the new Electro-Pen is that it requires no printing types and can record the computer's answer on any kind of paper.

This is how it works: special ink is intermittently spurted from a 100-micron nozzle (one micron=1/1000mm) to print small dots, which combine to form a digit. Since the liquid jet is electronically controlled, the pen has a far simpler structure than the printing mechanism of typewriter type. It can print at high speed and without noise not only digits but also *hiragana* and *katakana* (Japanese cursive and straight-lined syllabaries) as well as the Roman alphabet.

At present, the Electro-Pen can be connected with only the desk computer of Casio. Priced at about 30,000 yen, the new pen can be mass-produced.

"Sightseeing" Elevator

A unique elevator system, manufactured by Hitachi, Ltd., has recently gone into service at the new Hotel Nagoya Castle in Nagoya City. Designed for outdoor operation, the elevator car has floor-to-ceiling windows on three sides to give passengers a beautiful view of near-by Nagoya Castle and its surroundings.

Instead of operating in an indoor shaft, like conventional elevators, the new Hitachi system rides on a pair of rails which are recessed into an outer wall of the Hotel Nagoya Castle. Painted in luminous red, the elevator contrasts vividly with the white tiled wall of the building. Tail cords and governor ropes are tucked under cover for neater appearance.

Since the elevator operates outdoors, it has been provided with a special temperature control system. Also designed by Hitachi, this system features "soft heating" in the winter and "spot cooling" in the summer. The observation windows are made of dual reinforced glass panels that absorb the heat of direct sunlight to eliminate fogging of the windows. The elevator is capable of carrying 13 persons.



Water-Soluble Plastic

The problem of what to do with discarded plastics is becoming a big social headache since they not only do not decay but also emit toxic gas when burned. Of late, however, Denki Kagaku Kogyo K.K. (Electro Chemical Industrial Co.) has developed a new PVA (polyvinyl alcohol) resin that dissolves in water, and embarked upon the commercial production of various receptacles using this resin. PVA resin is also used as raw material for vinylon. Though easily soluble in water, it has so far been difficult to form into receptacles.

Denki Kagaku Kogyo has now developed a new technique for production of PVA resin that is not merely water-soluble but can be formed into various shapes. And it has decided to use the technique for manufacture of containers for agricultural chemicals, detergents and garbage bags. For instance, Denka PVA, translucent milk-colored bag for the laundry, completely dissolves in water with a temperature of over 60 degrees C. Therefore, the bag containing the laundry can be placed in a washing machine. Since it completely dissolves in water, it will be useful at hospitals, for instance, where there must be safeguards against germs.

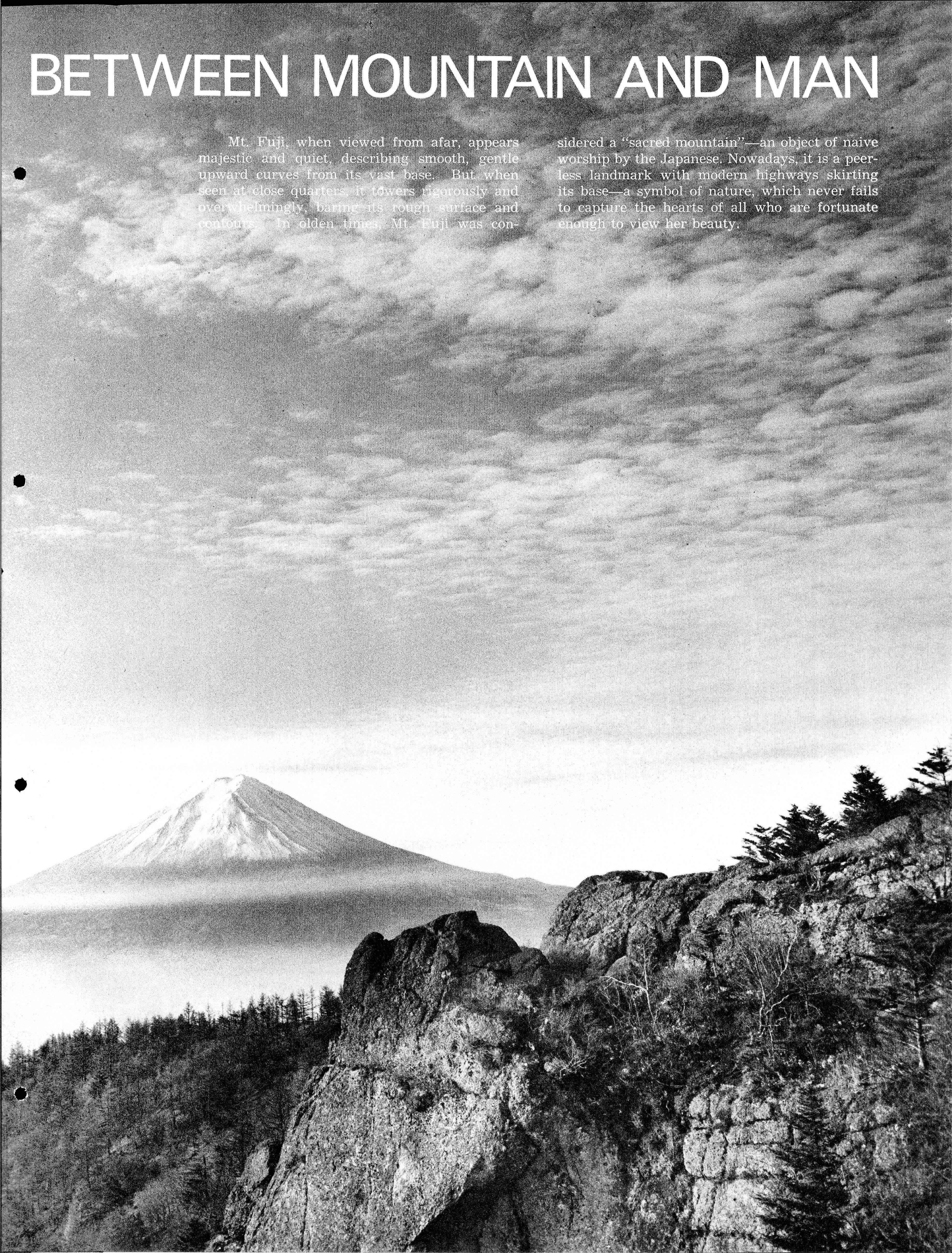
MT. FUJI: 1200-YEAR INTERFLOW



Mt. Fuji of the morning as seen from Mt. Mitsutoge on the northern side.

BETWEEN MOUNTAIN AND MAN

Mt. Fuji, when viewed from afar, appears majestic and quiet, describing smooth, gentle upward curves from its vast base. But when seen at close quarters, it towers rigorously and overwhelmingly, baring its rough surface and contours. In olden times, Mt. Fuji was considered a "sacred mountain"—an object of naive worship by the Japanese. Nowadays, it is a peerless landmark with modern highways skirting its base—a symbol of nature, which never fails to capture the hearts of all who are fortunate enough to view her beauty.



Text by TAKANORI OGAWA

No other mountain has endeared itself so closely to the Japanese people as Mt. Fuji. A Konide-type volcano, it is an independent mountain with vast skirts around it. It is not merely the highest peak in Japan, but also blessed with a fascinating figure.

The oldest mention of Mt. Fuji is found in the "Nihon-shoki" (Chronicles of Japan) compiled in 714 A.D. Furthermore, the "Man-yoshu" (Collection of Ten Thousand Leaves), Japan's oldest anthology, contains many poems on Mt. Fuji. Among these is a famous one composed by Yamabe-no Akahito in the 720's;

Tago-no-urayu
Uchiidete mireba
Mashiro nizo
Fuji no takane ni
Yuki wa furi keru
"As slow I pace on Tago's shore
Fair Fuji I descry;
Her peerless peak aloft doth soar,
Snow-crowned against the sky."

The poem vividly conveys the deep excitement felt by travelers of those days when they saw the majestic white-capped Mt. Fuji towering before their eyes.

The oldest mention of the ascent of Mt. Fuji is found in the "Fuji-san-ki" (Story of Mt. Fuji), written by Miyako-no Yoshika in the 870's. It gives a vivid account of pure-blue "magma" boiling in the crater of the summit and a rock shaped like a squatting tiger, which is still called "Tiger Rock." The descriptions in the book clearly show the author actually climbed Mt. Fuji. There is also a record that Buddhist priest Matsudai built the Dainichi Temple on the summit and buried Buddhist scriptures there in 1149. In 1928, a tube containing Buddhist scriptures was discovered near the Dainichi Temple (now the "inner branch" of the Sengen Shrine). This tube bore the name of the priest and the year 1219, corroborating the veracity of the old record.

A total of 18 eruptions of Mt. Fuji are recorded in ancient literature with the first one in 781 and the last in 1707. Most of them concentrated in 300 years from 800 to 1100 A.D. But the measurement of radioactivity emitted by Carbon-14, contained in "natural charcoal" formed by lava heat, which is still found under the lava stratum, has revealed that there were many more eruptions than those recorded in ancient literature.

Those who climbed Mt. Fuji while it was still erupting actively on the mountainside were the so-called *yamabushi* (mountain priests), who pursued religious studies and practised asceticism in mountains. They belonged to *shugendo,* a very ascetic sect of Buddhism. In the mountains, they endured shortage of water and food. But they were possessed of strong mental power and apparently undaunted by eruptions. Moreover, they presumably worshiped fire.

Apart from Buddhism, there was the *sangaku shinko* (mountain faith). That is, many people believed that the eruptions of Mt. Fuji were the work of God. They built a hall of worship—but not a shrine—to worship the erupting Mt. Fuji from afar. Around 800 A.D., a shrine was constructed and consecrated to Konohana-sakuya-hime, a goddess of Mt. Fuji. And people thus came to worship the goddess instead of the mountain itself. Therefore, when Mt. Fuji erupted, people ascribed it to the goddess' wrath, performed rites to soothe her, and would not climb the mountain. Meanwhile, the followers of *shugendo,* which contained an element of shamanism, identified fire with the sun and believed in "Dainichi Nyorai" (Dainichi Buddha) as the ruler of the universe. They climbed Mt. Fuji to its summit to practise Buddhist asceticism and worship the fire in the crater.

A record by the Government in Kamakura in 1250 says that "the custom of storing snow, brought from Mt. Fuji, in summer has been discontinued in view of much labor involved." This was cited as an example of "good government." Until then, perpetual snow at the top of Mt. Fuji had been brought by horse to Kamakura, more than 120 kilometers away, in summer. It is believed that the snow thus transported amounted to huge quantities. Otherwise, the snow would have melted by the time it reached Kamakura. This means that a climbing route had already been established, making it possible to haul down such tremendous amounts of snow.

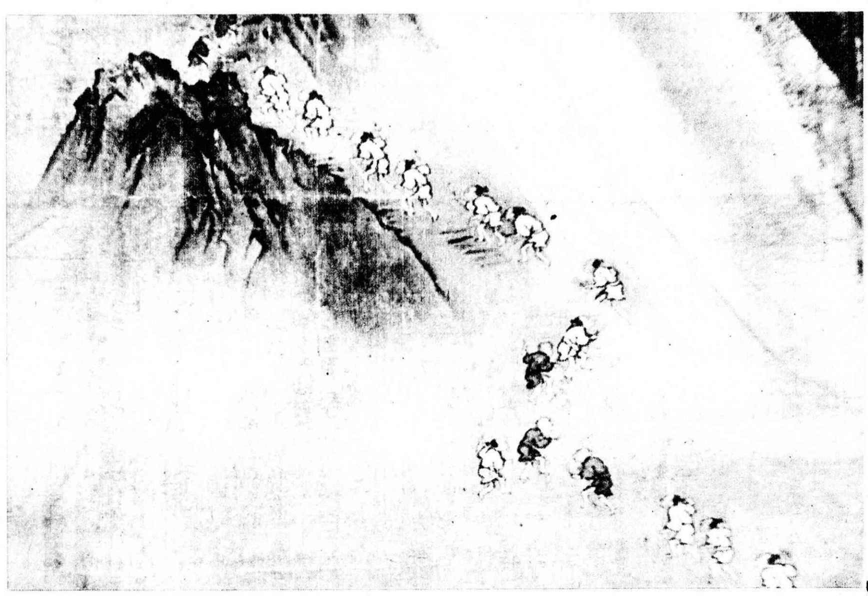
On the southern side of Mt. Fuji, favored by relatively warm weather due to the Pacific Ocean, a climbing route was opened in early days not by shrine worshipers but by the monks of *shugendo.* Around 1430, climbers' groups started to build their mountain huts one after another. Many of the Buddhist images found on the summit bear dates in the 1490's, indicating an increase in climbers in that period. A record dating back to 1518 says that "13 persons met deaths at the summit during a storm and a bear killed three climbers." A story of an ascent of Mt. Fuji, written by a priest of the Todaiji Temple in Nara in 1608, records that he saw several dead persons.

The monks of *shugendo* regarded mountains as sacred and purified their bodies with water gushing out at the foot of Mt. Fuji before climbing. Women were barred from climbing to the summit until 1872. They were allowed to ascend the mountain only up to the first station.

In the 1600's, when Tokyo was called Edo, climbers using the northern route increased, while climbing clubs called *ko* developed and the "mountain guide" was established as an occupation. Groups of white-clad climbers



An old picture (1400's) showing climbers cleaning themselves with gushing water before the ascent. The water forms the "wakutama-ike" pond in the compound of the Sengen Shrine.

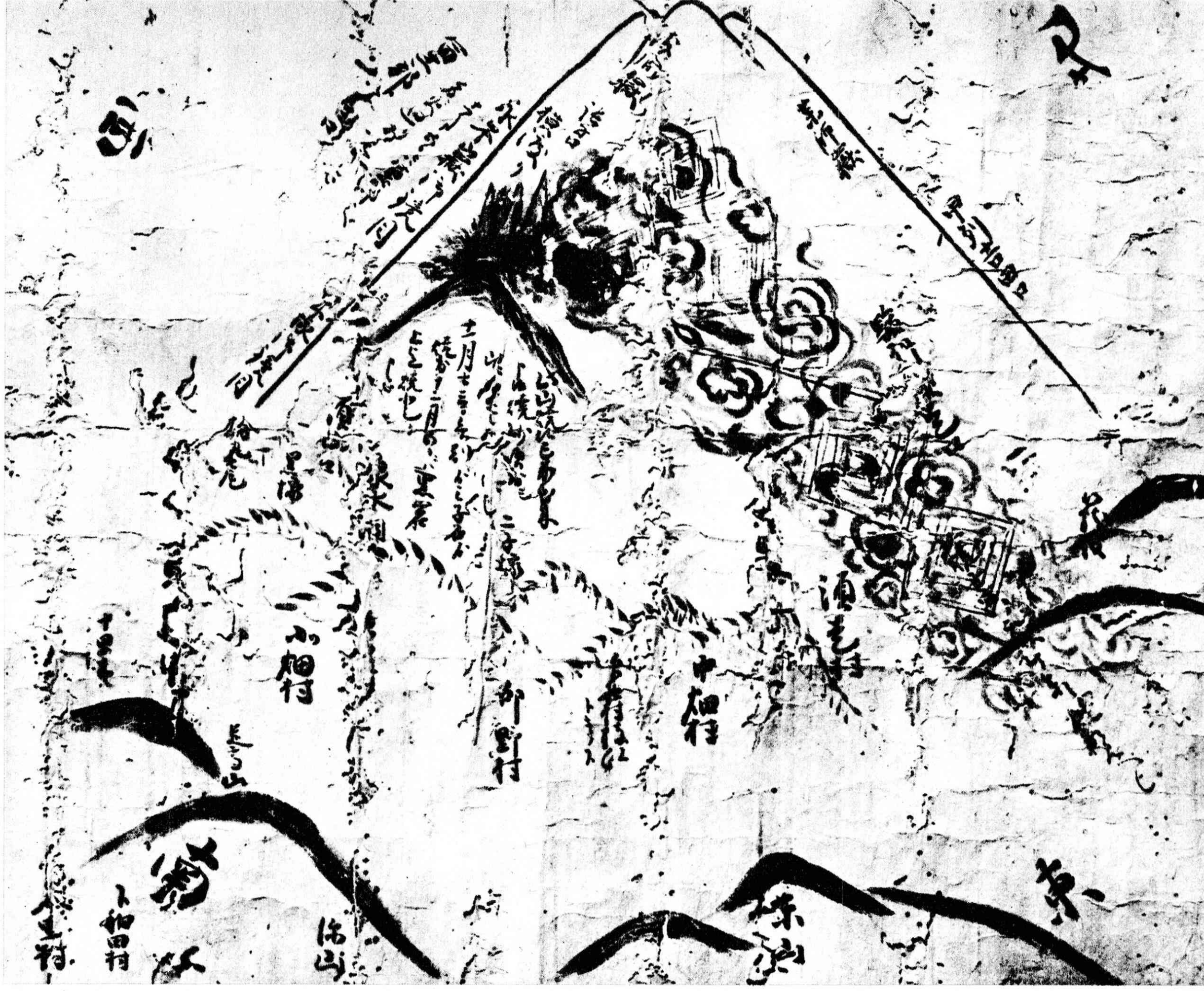


Ascent of Mt. Fuji as portrayed in an old picture done in the 1400's. This is the oldest painting of mountain climbing in the world (kept at the Sengen Shrine in Fujinomiya).

wearing sedge hats and carrying *kongozue* (pilgrim's staff), and led by guides, came to ascend Mt. Fuji in increasing numbers. *Oshi,* a sort of religious helper, provided all required services to these groups, such as arranging for lodgings and payment of the "climber's tax."

The northern climbing route developed mainly for visitors to the shrine. *Oshi,* attached to the shrine, maintained lodging facilities and thus held a dominant position. They thus tended to become secular. In sharp contrast, the southern climbing route was dominated throughout by "mountain priests" of *shugendo* from purely religious motives. But the shrine itself had no power.

In the Tokugawa Period (1603–1868), it seems, the ascent of Mt. Fuji as a form of religious worship spread among the general public. Meanwhile, the beauty of Mt. Fuji continued to be depicted in books and paintings. In particular, it is well known that the "36 Views of Mt. Fuji," painted by Katsushika Hokusai, the noted *ukiyoe* (genre picture) artist, influenced famous French painters, such as Vincent van Gogh and Paul Cezanne.



"Hoei Eruption" of Mt. Fuji in 1707 is depicted in a picture of those days.

THE first foreigner to reach the summit of Mt. Fuji was Sir Rutherford Alcock, the first British Minister to Japan. This was on September 10, 1860. In those days, Japan was about to terminate a policy



Guide map for the ascent of Mt. Fuji (1700's).

of national isolation, which had lasted for more than 250 years, under the mounting pressure of foreign powers. And the political situation was very unstable. The Tokugawa Shogunate finally opened the doors of Japan by concluding treaties of commerce with the United States, the Netherlands, Russia, Britain and France. But opponents of such a policy change still held strong power, and there were even incidents in which foreigners were killed by such elements. When the British Minister notified the Tokugawa Shogunate Government of his plan to climb Mt. Fuji, it would not give permission on the ground that the diplomat's personal safety could not be guaranteed during the trip. But Sir Rutherford set out from Tokyo on September 3, 1860 on the strength of the Anglo-Japanese Treaty of Commerce providing for diplomatic privileges of "freedom of movement and observation in Japan."

He was accompanied by members of the British Consulate in Yokohama, an Indian Navy officer and a British botanist, both for scientific study, plus armed sailors and his pet dog. In addition, the Shogunate Government assigned officials to join the party. As a result, the party swelled to more than 100 persons, including palanquin bearers and pack horse drivers. After passing Hakone, the group reached the foot of the climbing route on September 8 amid a typhoon. The following day, the weather cleared up completely. With the sunrise, they started to climb, guided by three "mountain priests." There were big trees everywhere felled down by the storm. They wrapped themselves up with blankets and slept in a hut at the sixth station, but because of the cold, they could not have a good sleep. The following morning, they resumed the ascent. But the British minister, already 51 years old and always busy with diplomatic business, became short of breath as he trudged up the mountain, and lagged behind others. After walking for as long as one hour from the ninth station, he finally reached the summit at midday on September 10. The Indian officer measured the crater, the boiling point of water, the latitude and temperature.

After descending Mt. Fuji, he rested at Atami spa. When he returned to Tokyo, he could still see the snow-covered Mt. Fuji. But Alcock's pet dog Toby, the first dog ever to reach the summit of Mt. Fuji, fell into hot spring at Atami and died and monument dedicated to him can still be seen there.

The British diplomat gave a detailed account of his climb in his diary kept during his three-year stay in Japan, which was later published under the title of "The Capital of the Tycoon" (New York, 1863).

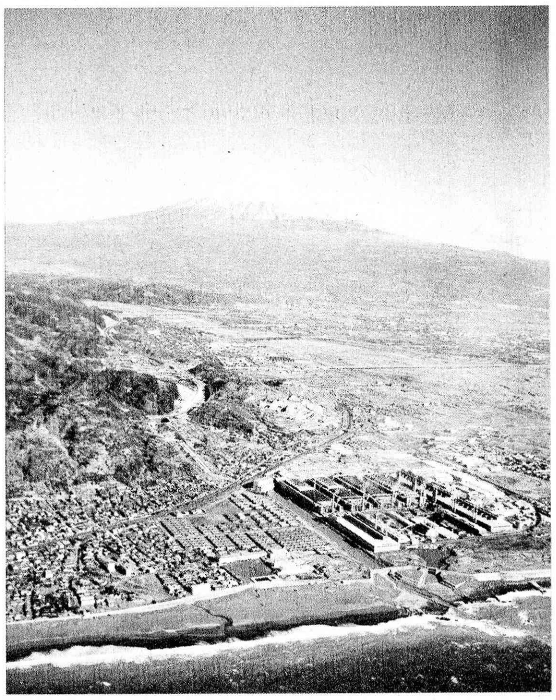


One of Hokusai's "ukiyoe" works (1800's).

THE base of conical Mt. Fuji has an area of 90,760 hectares with a diameter of 38 kilometers. In the past, the development of this huge mountain and its vicinity tended to be retarded because of thick layers of lava and volcanic ash unfit for farming, and the absence of rivers. But with the advent of the 1960's, the Mt. Fuji area has come into the limelight for large-scale development projects.

First, the opening of the superexpress New Tokaido Line in 1964 sharply cut the travel time from Tokyo to the southern foot of the mountain to only one hour and that from Osaka to two hours. This was followed by the completion of a motorway up to the 2,400-meter level, bringing Mt. Fuji still closer to the residents of big cities on the Pacific coast. The development of the transport network in the region progressed parallel to a growing "leisure (recreation) boom" generated by the nation's rising living standard. As a result, climbers of Mt. Fuji and visitors to tourist spots at the foot of the mountain, such as the five lakes of Fuji, showed a sharp uptrend, while tourist facilities were vastly improved. Furthermore, paper-manufacturing, nylon-processing, film and rayon factories at the southern foot of Mt. Fuji, utilizing the underground water of the mountain, have made giant strides. Paper mills alone, both large and small, already number as many as 130. In recent years, however, the demand for water has expanded so fast that the level of underground water has dropped to the extent where it contains salt, presenting severe problems for the plants in the area.

In the spring of 1969, two expressways passing through the region were completed in succession—that is, the Tomei Expressway connecting Tokyo and Nagoya by way of the eastern and southern foot of Mt. Fuji, and the Chuo (central) Expressway running through the northern foot. This brought the vast expanse of land at the foot of Mt. Fuji completely into the National Capital Region with Tokyo as the core. As a consequence, the



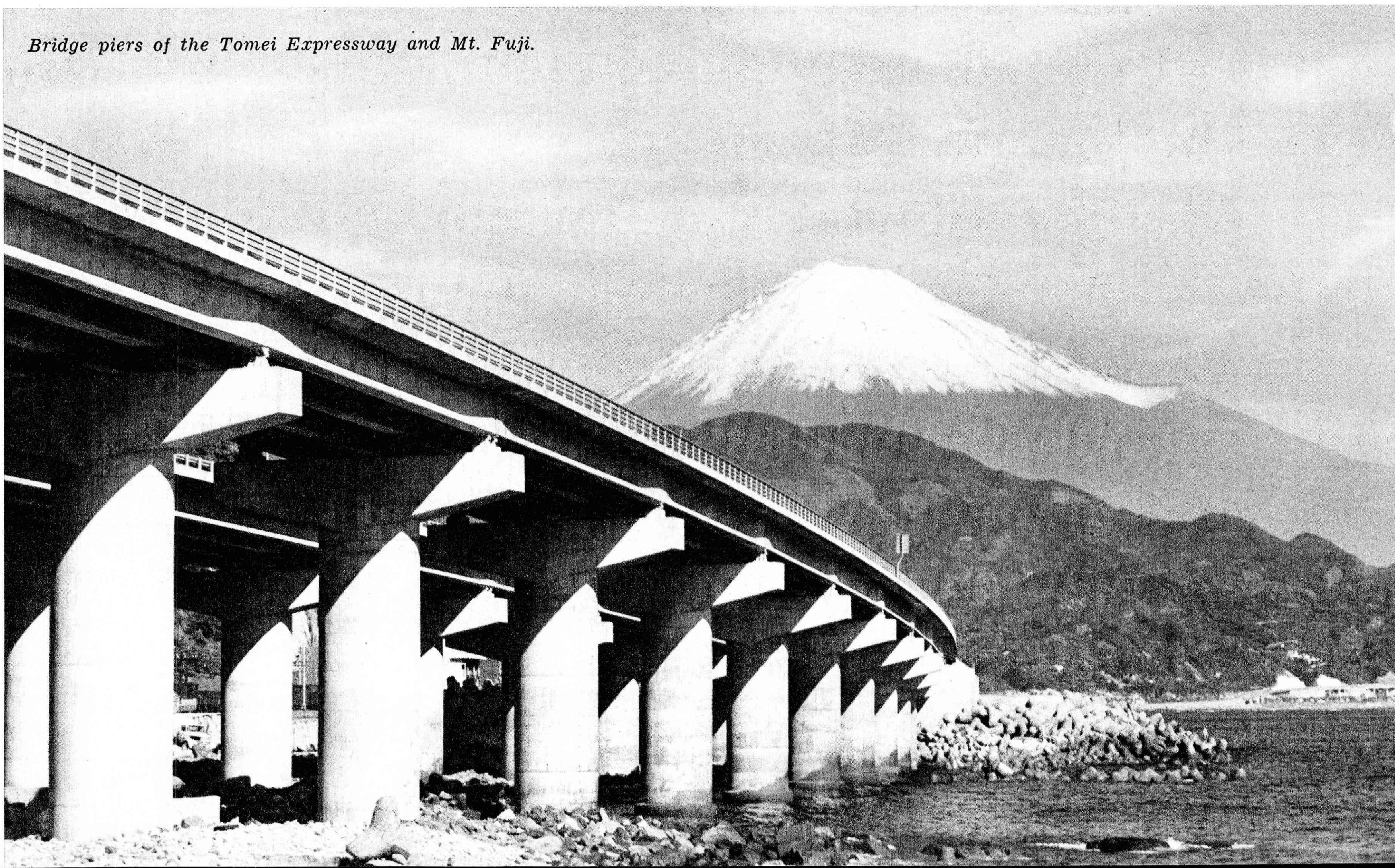
Many factories utilizing gushing underground water are situated at the southern foot of Mt. Fuji facing the Pacific Ocean.

idea of urban development at the foot of Mt. Fuji has come to the fore. Tokyo, national capital, with a huge population of 11 million has already reached a limit in both size and congestion with its urban functions close to paralysis. And as a possible solution, a partial transfer of its urban functions to the foot of Mt. Fuji has been proposed. Various ideas along this line have been put forward by industrial circles and groups of scholars—fo instance, the development of an academic city through the transfer of Tokyo's universities, a "city of government" for relocation of government offices or large-scale residential sites.

Meanwhile, the tourist industry has also announced varied plans for the development of the Mt. Fuji area. Particularly noteworthy among them is a project to build a "Mole Cable" (underground cable railway) from the present terminal of the motorway up to the summit. This is said to be technically feasible. And railway, if and when completed, would enable anyone to enjoy a panoramic view from the top of Mt. Fuji—literally, the "No. 1 view" of Japan—all the year round. At the same time, it would prove a big boon to the staff of the weather station at the summit.

Of course, there is also a strong opinion that nature of Mt. Fuji should be left intact. Holders of this view argue that it is more significant to give top priority to protection and leave the beautiful nature of Mt. Fuji to posterity than to build concrete structures of varied shapes around the mountain. Incidentally, Mt. Fuji and the main parts of its slopes are designated as a national park, and any unsystematic destruction of nature is prohibited. Nevertheless, now that the vast expanse of land at the foot of Mt. Fuji has been directly linked with Tokyo, about to burst at the seams, by three arteries—the New Tokaido Line, the Tomei Expressway and the Chuo Expressway, it seems actually impossible to exclude the area from development projects, aside from what form these would take. But in all probability, the development of the Mt. Fuji area will progress in the 1970's several times or even scores of times faster than in the past decade.

Bridge piers of the Tomei Expressway and Mt. Fuji.





Photos by Takanori Ogawa, Kyodo Photo Service

Mt. Fuji as viewed from an altitude of 10,000 meters. Mountains in the distance are Southern Japan Alps.

MT. FUJI: TREASURE TROVE FOR STUDY OF NATURAL SCIENCE



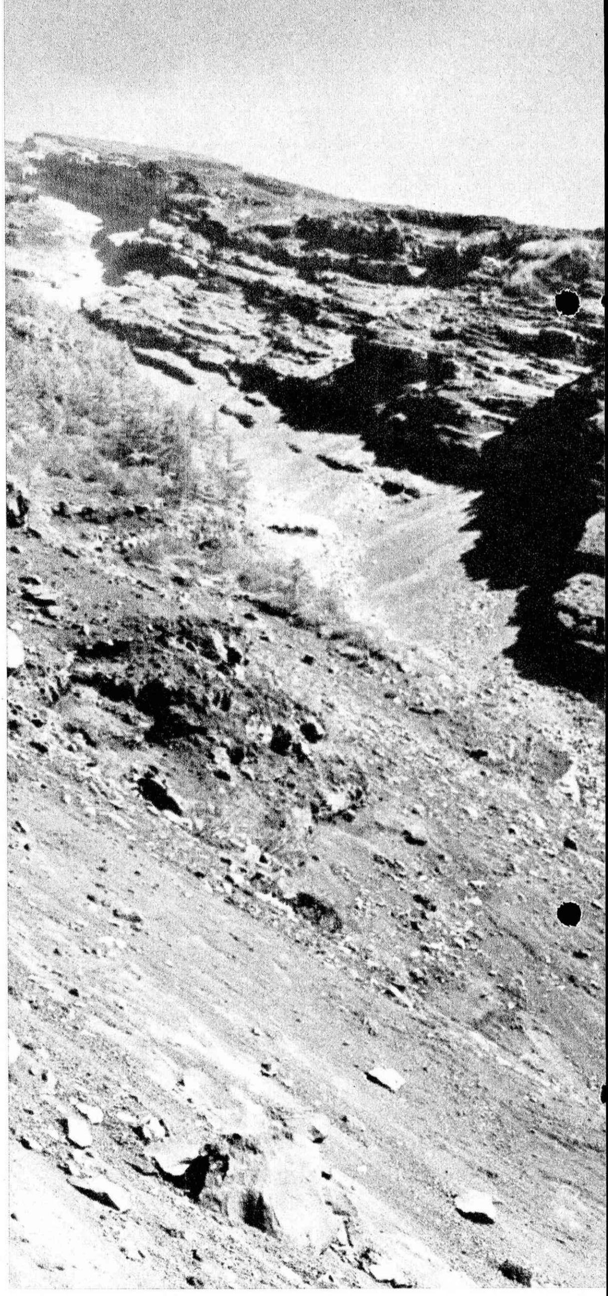
Mt. Fuji as viewed from Lake Kawaguchi (infrared film used). The white portion represents a vegetable zone. It clearly shows that plants are distributed up to the height of about 3,000 meters above sea level.

Photos by Takanori Ogawa
Saburo Yamamoto
Sanae Serizawa



Below: Summit crater. 700 meters across and surrounded by eight different peaks. Weather Station stands on the highest peak, Kengamine. Right: Upper part of Osawa valley. Multiple strata of lava and volcanic ashes are vividly shown.





MT. Fuji, the highest mountain in Japan 3,776 meters above sea level, is a familiar symbol of the country, and renowned the world over. However, its connections with natural science are little known. And, this article throws a spotlight on this aspect to clarify that Mt. Fuji is not merely beautiful in shape, but also a treasure house for the study of science in nature.

To begin with, let us consider the history and geological features of Mt. Fuji. The world has a total of 457 volcanoes, of which 362 are located on the periphery of the Pacific basin. Japan has 186 volcanoes, including extinct ones. Of these, 48 are dormant or active volcanoes emitting fire and smoke. Mt. Fuji is a dormant volcano of the Konide type.

In the Old Tertiary Period tens of millions of years ago, there was a major geotectonic zone running north to south on Honshu, the largest island in the Japanese archipelago. Named Fossa magna (big fissure) by Edmund Naumann, German geologist, in 1885, the zone was filled with sea water. In the Miocene Epoch of the New Tertiary Period 20 million to 30 million years ago, it formed a big channel nearly 10,000 meters deep. About that time, a submarine volcano started to erupt. Tremendous amounts of volcanic ash and lava, emitted by the volcano, as well as mud and gravel flowing from both banks piled up to a height of more than 10,000 meters. Then the pile underwent a "fold" process due to orogeny, finally forming the mountains now surrounding Mt. Fuji.

It was at the southern extremity of Fossa magna that Mt. Fuji started volcanic activity. And roughly speaking, its present shape emerged after three periods of eruption.

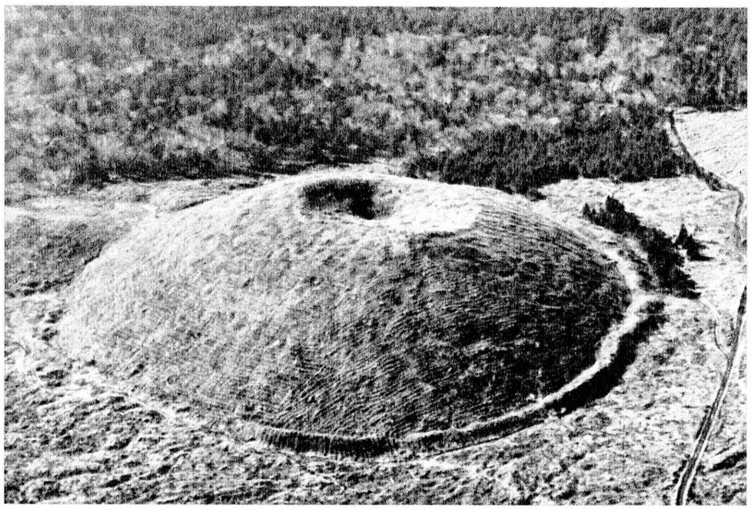
First, the Fuji Volcanic Zone stretching for 1,400 kilometers along the line of Fossa magna began erupting in the Diluvial Epoch of the Quaternary Period 500,000 to 600,000 years ago. Komitake Peak (2,400 meters above the sea), now located at the terminal of the toll highway, Subaru Line, on the northern side of Mt. Fuji, is a remnant of mountains formed during the first eruption.

The second period of eruption came 50,000 to 60,000 years ago after Komitake Peak had become an extinct volcano. The eruption started at about a point just under the present crater of Mt. Fuji on the southwest side of the peak. This period corresponded to the middle to latter part of the Old Stone Age when the earth was inhabited by the Neanderthal men and the Cro-Magnon race. The mammoths were then at the height of prosperity. Mt. Fuji, formed in the second period of eruption, is called "Ko-Fuji" (Old Fuji) and constitutes the core of the present-day Mt. Fuji.

About 10,000 years after "Ko-Fuji" ended its volcanic activity—that is, at the outset of the Alluvial Epoch about 10,000 years ago, "Shin-Fuji" (New Fuji) began to erupt. Lava flow and volcanic ashes emitted from the summit formed many layers while piling up and covered "Ko-Fuji" and Komitake Peak. "Shin-Fuji" thus gradually grew as a conical volcano, finally developing into a giant Konide-type volcano 3,776 meters above the sea as we see it today.

Furthermore, Mt. Fuji has many parasitic volcanoes. These are small volcanoes formed by eruption through the mountainside. Some have independent craters, while others show lava flow only through fissures on the mountainside. Thus far, 60 parasitic volca-





Next page (color): The winter of Mt. Fuji sets in October when the seasonal wind from Siberia grows strong. Temperature at the summit plummets to more than 30 degrees below zero C. as the mountain becomes a world of rugged rocks, high winds and blankets of ice and snow. The photo shows the summit as viewed from the height of 2,400 meters above the sea.

Left: Koshikiri-zuka, one of parasitic volcanoes of Mt. Fuji. Its crater measures 40 meters in diameter. Below: Shira-ito-no-taki (White Thread Cascade). It is the fall of not river water, but water gushing forth from between rocks.



noes have been confirmed on Mt. Fuji, some of them only recently, with more expected to be found from now on. It is due to the activity of these parasitic volcanoes that the shape of Mt. Fuji is not a perfect cone and is deformed here and there.

ERUPTIONS of Mt. Fuji after prehistoric times are recorded in various works. The oldest is mentioned in an official governmental record of 781 A.D. And the latest eruption occurred in the 4th Year of the Hoei Era (1707). At the time, it is said, a rain of volcanic ashes fell in Edo (now Tokyo). Since then, Mt. Fuji has remained dormant. Yet there are still areas near the summit and the crater of the 1707 eruption where subterranean heat is high, indicating that Mt. Fuji is not completely dead.

At the moment, studies are under way to pinpoint the lava flows and places of eruption as recorded in old literature. And the clue in this research is natural charcoal produced by lava heat (that is, trees turned into charcoal when covered by lava), which is found during public works, such as highway construction. That is, the half life period of radioactive Carbon-14, contained in such charcoal is measured to fix the time of its formation and thus determine which eruption as recorded in literature emitted the lava that produced charcoal.

Lava of "Shin-Fuji" (New Fuji) is a kind of basalt. It is supposed that the temperature of lava flow was high at around 1,000 to 1,500 degrees C. Therefore, it is soft and there are many "lava caves" formed when gas, contained in lava, escaped. Up to the present, 62 such caves have been found in the Fuji area, accounting for as much as about 85 per cent of all "lava caves" so far discovered in the world. Mt. Fuji is thus a mecca for the study of "lava caves." Little has been known about the cause and scale of Mt. Fuji's "lava caves" in the past. But their mystery has been partially clarified through a Comprehensive Scientific Survey of Mt. Fuji recently conducted by the National Park Association.

In addition, Mt. Fuji has a great many "tree molds," which are rare in the world. These were formed when lava flowed into the wood of big trees and burned them up, leaving only the shapes in the form of "mold." Large ones measure as long as two meters in diameter, and look like tunnels. "Tree molds" are found especially in large numbers in the Aokigahara Plain formed by lava flow at the time of the 846 A.D. eruption (now covered with thick primeval forests).

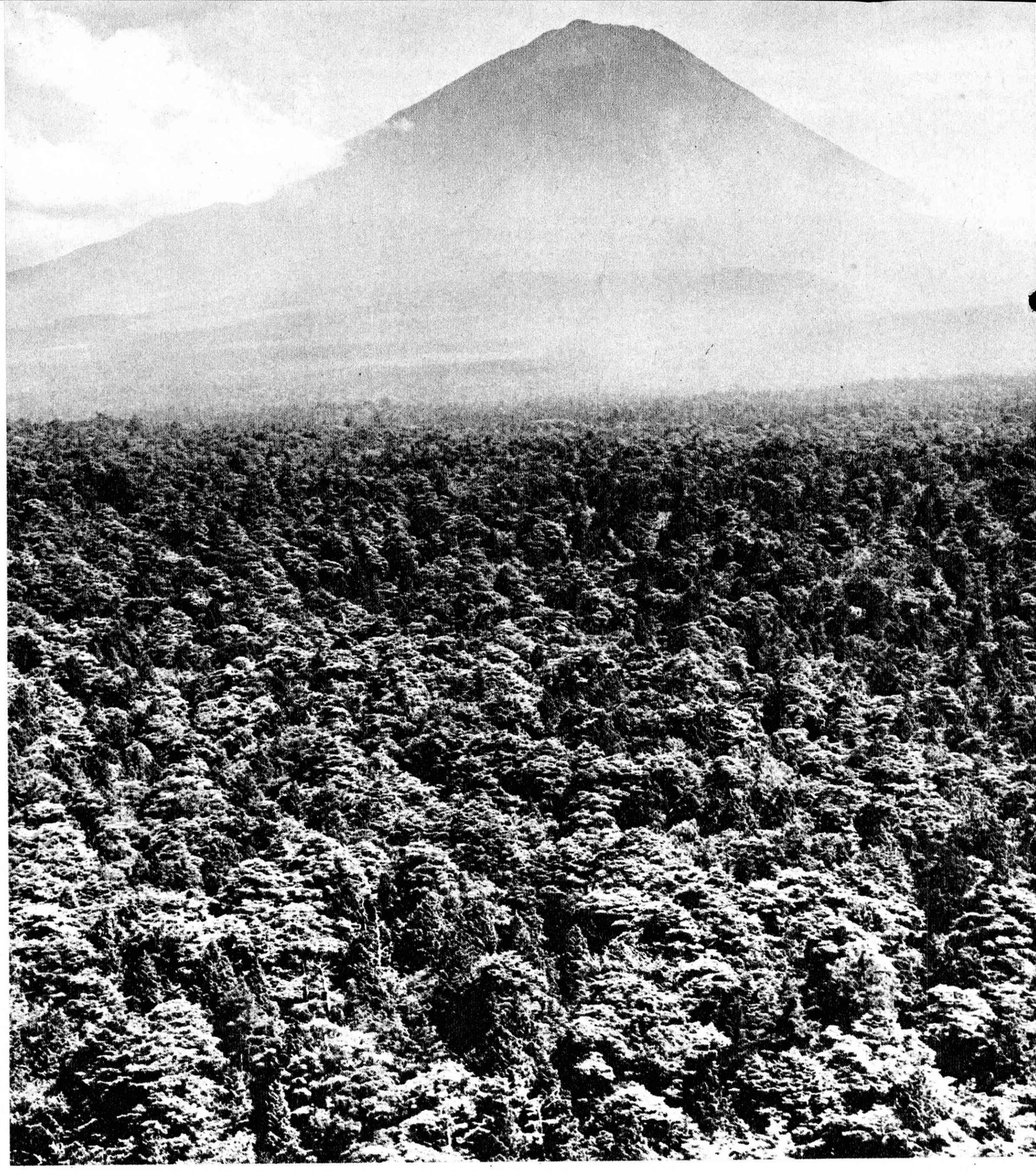
Mt. Fuji has swamps, but not rivers. Rain water and thawing snow (annual precipitation: 3,000 million cubic meters) sink through lava and lapilli, and form underground streams, which gush out at the foot of the mountain. The water flows out from between the agglomerate of mud of "Ko-Fuji," which is impervious to water, and the pervious stratum of lava. At the foot of Mt. Fuji, there are five major lakes—Kawaguchi, Shoji, Sai, Yamanaka and Motosu. As there are no rivers flowing into these lakes, their water level is believed to be maintained by the gushing water of the underground streams. The abundant underground water has contributed to the development of paper and textile industries at the southern foot of Mt. Fuji. It is also used for the largest trout breeding farm in the Orient.

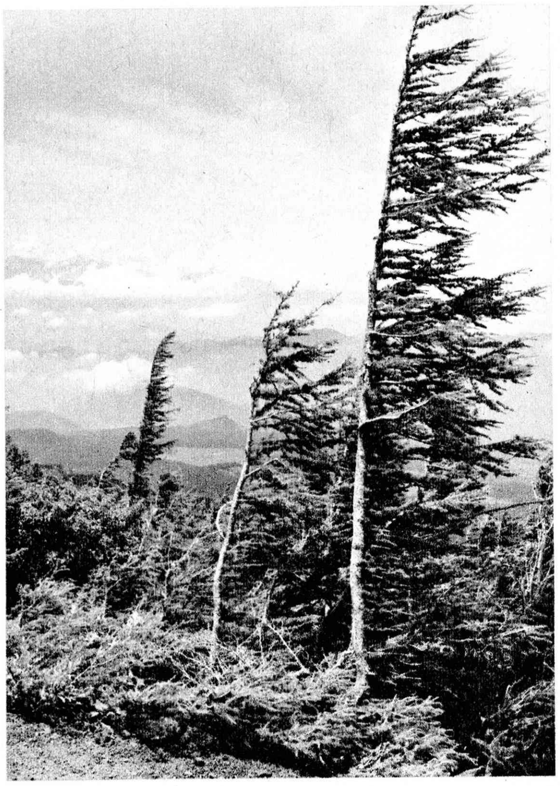
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Right: Aokigahara Plain formed by lava flow is now covered with thick primeval forests. Below: Trees on the northern side of Mt. Fuji are exposed to strong west winds throughout the year. Therefore, branches spread only in the easterly direction.





Continued from page 17

NEXT, let us take a look at the fauna and flora of Mt. Fuji. The primeval forests of Aokigahara have much moisture and luxuriant moss. A recent survey has discovered two new species of soil ticks. Besides, new species of microorganisms living in drops of water about 1,000 meters above the sea level, have also been found. One is a marine type—a proof that Mt. Fuji resulted from an eruption on the foundation of old soil, which upheaved from the sea bed.

The fauna of Mt. Fuji thus far confirmed consists of 45 species of mammals, 179 birds, 12 of reptiles, nine of amphibia, 14 of fish and about 100 species of butterflies and other insects. There are also bats that have been found only in the Mt. Fuji area. Its peak is also inhabited by rodents, which show adaptation to highlands as instanced by the amount of fur and the strengthened wall of the right ventricle of the heart.

Since Mt. Fuji is a relatively new volcano, its flora has no such peculiarities as are observable on other high mountains. There are neither plants remaining from the Glacial Epoch nor those of high-moor type. But Mt. Fuji is an ideal place for the dynamic study and observation of the vegetable kingdom—that is, how plants enter and settle down on bare earth.

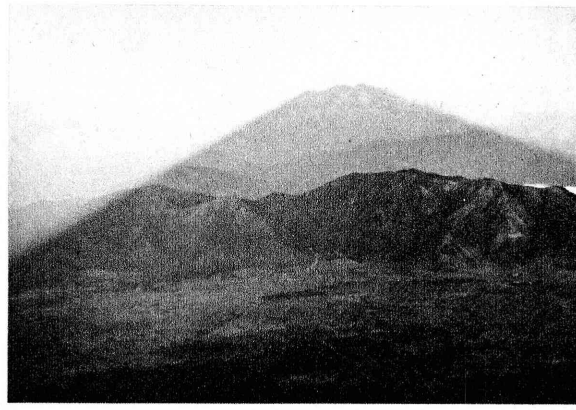
The flora of Mt. Fuji is marked by vertical distribution — namely, the evergreen broad-leaved tree belt below 800 meters above sea level, the summer-green broad-leaved tree belt below 1,600 meters, the sub-alpine needle-leaved tree belt below 2,400 meters and the alpine belt above 2,400 meters. The altitude limit to the growth of forest is 2,400 to 2,600 meters on the northern slope of Mt. Fuji and 2,200 to 2,400 meters on the southern. Volcanic wilderness plants can, however, grow up to 4,400 meters above the sea in the case of Mt. Fuji. But actually only Carex stenautha and Stellaria nipponica are seen up to about 3,000 meters. One of the reasons for this is that as Mt. Fuji is a relatively new volcano, there still continues the movement and degradation of gravel. Another reason is that being an independent mountain, it is exposed to strong winds. If one drives along the toll highways on the northern and southern sides of the mountain, which climb to 2,400 meters above the sea, one can observe the changing patterns of the forests.

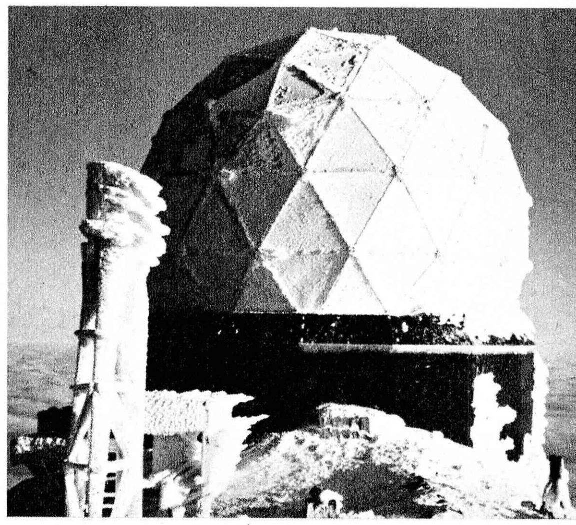
LASTLY, there are the meteorological features of Mt. Fuji. Since it is situated on the Pacific coast, its weather conditions are affected by the Ocean below. Even in winter, therefore, Mt. Fuji area is warm and has little snow compared with many cloudy and snowy days on the Japan Sea coast due to the cold air mass of Siberia. Yet as it is an independent peak, it is liable to drastic local weather changes.

In summer, snow melts away, exposing the reddish brown mountain surface of volcanic ash. This is the season for mountain climbers with the peak coming in July and August. At the summit, however, it snows sometimes even in summer, although the snow does not stay. Therefore, the weather station at the summit describes snow falling before the day when the year's highest temperature is registered as snow of the last winter—that is, last snow, while snow that falls after this day is called snow of the coming winter—namely,



Left: Banner cloud. Mt. Fuji, being an independent mountain, is the best condition for creating beautiful clouds of varied shapes. Below: Mt. Fuji in silhouette. Bottom: Radar antenna dome at the summit in the dead of winter.





first snow. It is around the middle of September that the summit of Mt. Fuji is covered wholly with snow. After that, the snow blanket gradually spreads down.

The weather station at the summit was established in 1932. It has since engaged in weather observations without a single day's rest. And its observation data has contributed in no small measure to the development of meteorology. A weather observation radar, which went into operation at the station in 1965, is the highest in the world, proving very useful for prediction of the course of typhoon. At the summit where atmospheric pressure is only 60 per cent of the ground level, water boils at 87 degrees C. In winter, the wind blows at an average velocity of 21 meters per second with the maximum speed placed at 72.5 meters. In January, the average temperature is down to 19.2 degrees below zero C., and the minimum is placed at 35.5 degrees below zero C. Despite such rigorous conditions at the summit, the weather station is manned throughout the year for constant observations.

The whole shape of Mt. Fuji is seen from the ground most clearly in winter—that is, when it is enveloped by high atmospheric pressure which brings cold, dry air from Siberia. And this is substantiated by statistics for the past 10 years. That is, the number of days when Mt. Fuji was seen from the ground stood at 12.4 in November, 15.3 in December, 18 in January and 12.4 in February. By contrast, summer is not an appropriate season for seeing Mt. Fuji as warm, humid air flowing in from the Pacific Ocean is cooled when passing the summit and forms clouds. Therefore, the mountain shape could be seen only on 2.4 days in June, 4.4 days in July, 4.2 days in August and 4.1 days in September.

In the disaster of March 5, 1966, a BOAC Boeing 707 jetliner, after taking off from Tokyo International Airport, disintegrated over the northeastern part of Mt. Fuji because of air turbulence. As Mt. Fuji is an independent mountain, turbulence is prone to occur on the lee side. In the past, three F-86D jetfighters of the Japanese Air Self-Defense Force also crashed into the mountain when subjected to an impact with a force of 5 g. And so Mt. Fuji, though presenting a graceful figure, is a "dread mountain" for pilots of aircraft.

Diverse shapes of clouds are formed around Mt. Fuji due to complicated meteorological conditions, such as different strengths of air currents in upper and lower layers, thickness of humid layers and ascending air currents arising from isolation. For instance, beautiful cap clouds and lenticular clouds are also helpful to weather observation. When *tsurushi-gumo* (a kind of orographic clouds) appear, the distribution of atmospheric pressure is always the same. That is, a line of discontinuity and low atmospheric pressure occur north of Mt. Fuji, while a southwesterly wind blows from the ground, and in the upper layers, west-southwesterly or west-northwesterly winds are strong.

When a low atmospheric pressure area approaches to more than 1,000 kilometers west of Mt. Fuji, the emergence of *tsurushi-gumo* makes it possible to determine whether it will pass the Pacific coast on the southern side of Japan or the Japan Sea coast on the northern side.

PILGRIMAGE TO FUJI'S SUMMIT,

Text by S. SHERIDAN PRESSEY

IT was to be a day unlike all other days, I could tell that from the first. Camped out in front of the Tokyo Prince Hotel awaiting the tour bus that would take us away to Mt. Fuji and the Splendid Challenge that awaited, I felt every bit the sport in my mountain-climbing garb and sturdy caravan boots. Under my two layers of sweaters and socks, however, though it was only 8:45 on that mid-August morning, the warm day was becoming especially so, and I began to wonder if the threats of ice and wind



The Model Alpinist before departing Tokyo.

ahead weren't all a lot of wishful thinking. Under my bluejeans I had been advised to wear long underwear; in the borrowed knapsack beside me were nestled a windbreaker with hood, a full-length plastic raincoat, an extra sweater and pair of socks, gloves, zinc oxide, camera, a small flask of Suntory whisky and my Japanese-English dictionary, all necessities, I was told, for an expedition of this sort; in hand were a straw hat and sunglasses. My four Japanese companions, a girl and three boys, were similarly equipped, except with the additional burden of food and medical supplies. Were we really only going to be away a mere 36 hours?

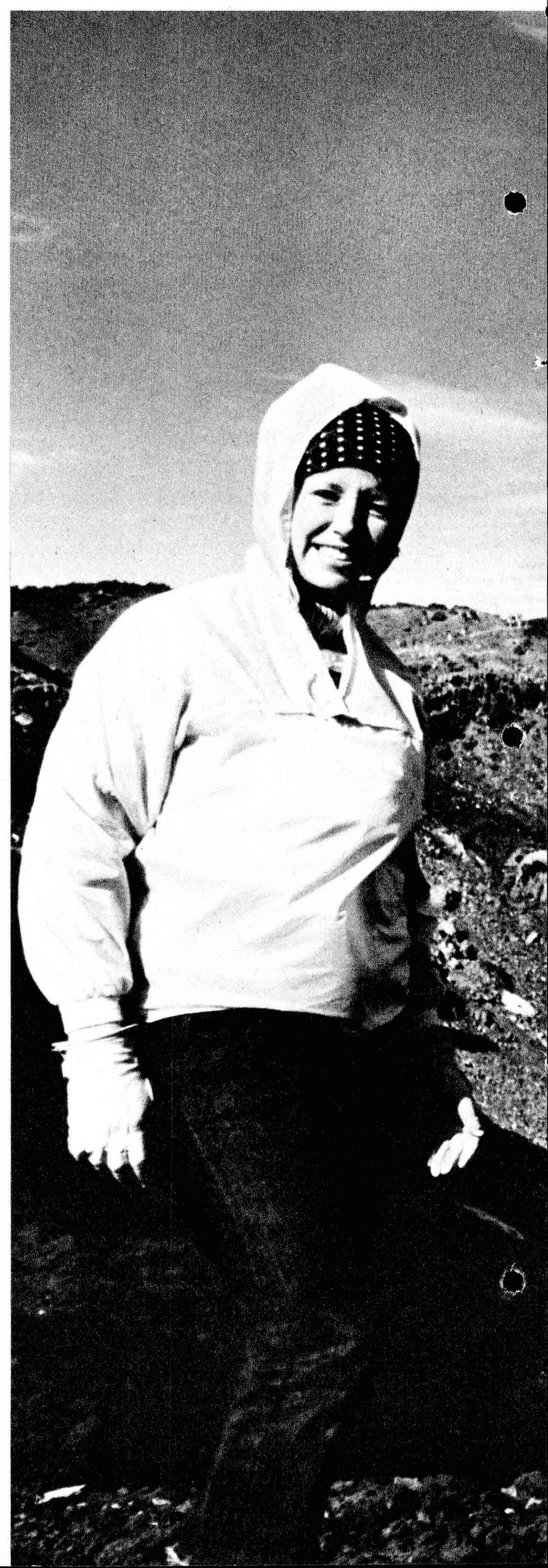
Without being a confirmed alpinist by any stretch of the imagination, I had impulsively agreed two weeks earlier to accompany my four friends on an assault against Japan's most fabled peak, Mt. Fuji, or Fuji-san, as it is referred to respectfully. Not that this was a new idea—over 400,000 people every year tred the worn paths which form six different routes up the sides of the 3,776-meter dormant volcano to the summit. Pilgrimages to the top of Japan's highest mountain have, in fact, been the rage since at least the year 1500, when religious *Fuji-ko* (Fuji-worshippers) made the climb to pray for health, happiness and prosperity; for besides being admired for its beauty and near-perfect form, Mt. Fuji has long been considered a "symbol of the Japanese people's destiny, foundation of the national administration and a pillar of the country."

Latter-day pilgrims do not attribute the same spiritual and material benefits to the experience, although physically they are likely to suffer similar after-effects. Nevertheless, the challenge and indeed the compulsion to climb remain, and lines of people continue to stream endlessly up the mountain every year during the July-August climbing season, while some undaunted individuals accomplish the feat at other times during the year when Mt. Fuji is officially "closed." Who was I to forego the opportunity?

On the August weekend we had chosen for the climb, the weather, on which the whole expedition depended, was forecast to be glorious, and that alone spurred us on in the assurance of at least a good view from the summit. The five of us piled into the Fuji Kyuko World Bus which was to take us along with 40 foreign tourists by way of scenic Chuo Expressway to sacred Fuji-san. We, with all of our gear, must have looked as strange to the tourists as they did to us, in their short-sleeved shirts and flimsy shoes, hardly prepared for a close-up look; we appeared to be the only *real* mountain adventurers on the bus.

Our first glimpse of Fuji-san found the tranquil peak shrouded in clouds, which 263 years ago might have been smoke billowing from the fiery crater during Fuji's last recorded eruption. As the clouds cleared periodically, we could view the concave summit, at that time of year barren of snow, which usually begins falling in late September and doesn't stop until June. The striking contrast of the huge cone of lava rock, 40 kilometers in diameter at its base, to the tiny thatched and wooden huts skirting it made me begin to doubt the wisdom of our whole endeavor.

Mt. Fuji sheathed in cloud and sunlight and struck against a broad expanse of sky is certainly a most impressive sight; for centuries it has been an inspiration to poets, philosophers and artists, resulting in such noted works as Hokusai's wood-block series "100 Views of Fuji." One of many Japanese legends as to Fuji's origin tells of a woodman who saw the mountain rise in a single night and was then put to sleep much like the Western Rip Van Winkle; his spirit is still said to haunt the mountain under the full moon. In reality, however, the final product is said to have been the result of an immense



or How to Make the Grade Without Really Trying

Photos by ICHIYANAGI PRODUCTION

lava discharge some 10,000 years ago which covered two smaller mountains, giving Mt. Fuji its present shape. A shrine now stands on Fuji's slopes to honor the older of these two mountains, Mt. Komitake.

Enough background. Every aspiring climber of Japanese mountains should know, however, that trails up each slope are divided into 10 sections of unequal distance: One's progress is measured by the number of stations one has attained. Most Fuji climbers begin at the 5th Station of the Yoshida Trail, regarded as the "rear entrance" to Mt. Fuji, at a height of 2,300 meters or so. From there the slope steepens, roads end and paths begin, and the maple trees, oaks, birches and pines of the lower altitude areas disappear. After a two-and-a-half-hour bus ride, made less tedious by the light remarks and folksinging of the pretty female bus guide, we gladly debarked at the 5th Station, and by the crisp air I realized that we probably *would* be needing every bit of clothing we brought before we reached the summit. The 5th Station is very much like the "Last Watering Hole," because there is indeed very little at the stations beyond it. Few merchants are eager to lug their souvenirs and refreshments much higher, and if hey do you can count on the prices going up accordingly. On the other hand, one hopes that this point truthfully is, as it is called, "the borderline between heaven and earth," for the crowds of cars, people and shops compose a scene of utter madness. After one glimpse we could not have been more eager to leave.



Fuji's lone crater is known as the Sanctuary of the sacred volcano. The Meteorological Observatory sits defenseless above on Kengamine Peak.

But the one thing our group was in need of was a *kongozue,* or Fuji walking stick. Traditionally, a pilgrim's staff was carried on the climb to support the conscience as well as the body, but these days, if carried to the top and brought down again safely, it holds the stature of a trophy. For at every station the hut master will for ¥20 (5¢) emblazon on your octagonal wooden pole the number and height of the station, proof *positive* that you made it to that point. The strange forces of fate, as so often happens in Japan even in the largest of crowds and most remote of places, allowed us to accidentally meet up with a friend from Tokyo about to depart for the city. He woefully offered us his stick, complete with the Imperial Navy battle flag, only partly used because bad weather had prevented him from going beyond the 7th Station. A light drizzle was beginning to threaten the same treatment to us, but I resolved to plant the stick on the summit or die trying.

After some lunch and a visit to the small Komitake Shrine honoring the parent mountain of Fuji-san, at 2:30 p.m. my four companions and I set out energetically, our plan being to spend the night at the 8th Station and reach the summit by sunrise the following morning. We had acquired a horse and a guide to service us part way, and they were well appreciated; for while the horse carried me and the bulk of our equipment, the guide kept us off the rocks. In sympathy, we all felt our steed at least deserved a name for his trouble which, the guide admitted, it had never received in all its 12 years. Dubbing it Silver, the natural name for a white (read grey) horse, I translated into Japanese—"Gin." "Ah, King!" exclaimed the guide, recognizing a pet's name that I was dismayed to find out was also used outside the U.S.; so King it became.

It was with much regret that we surrendered my mount at the 7th Station, for the ride had given me the leisure opportunity to enjoy the interesting scene around us. From the 5th Station the trees had given way to shrubs and the shrubs soon to mosses; the fertile soil common in lower altitudes gradually was replaced by rough gravel and lava rock. The weather, though bothering us no more with rain, played mischief with the clouds. At any given moment the sky would be dreary and overcast or shiny and sunlit with a magnificent view, which improved as we went higher, of the North Japan Alps to the west, Lake Yamanaka to the east, the largest of the five lakes at Fuji's base, and Lake Kawaguchi directly below.

WHAT continually amazed me during the climb were the number and variety of pilgrims painstakingly making their way toward the summit. What began at the 5th Station as an exceedingly disassembled and sporadic stream of people had become by the 7th Station, as the path narrowed and steepened, a winding thread of panting robots four abreast. To some giant we would have looked like ants on an anthill, which is certainly what I felt like as the wind blew and the dust flew and we plodded doggedly forward up the mound of red-brown dirt and rock. Though not until 1872 during the Meiji Restoration was any woman ever permitted to climb Mt. Fuji, it appeared that about one out of every three people on Aug. 17, 1969, was a woman, ranging in age from about 7 to 75 years.

Frequently, boy scout groups raced past us with incomprehensible vigor; priests, expeditions of company employes, families and school groups were all part of the cavalcade. Many of the men were smartly garbed in hiking clothes, thick socks and canvas shoes, with knapsacks on their backs and walking sticks in hand; a distinctive few, however, wore coats and ties and a muffler or two. Women were generally put together more demurely,



Like ants we climb. Single-file up the mountain.What in the world am I doing here ?!



Left: *(She) "doth bestride the narrow world like a colossus." Ever forward, like a true Aries. And "King," my valiant steed never faltered, thanks greatly to the guide who led us.* Below: *Climbers relax around the coals in the 8th Station hostel after a tiring climb.*



in sneakers, straw hats, parkas, pretty sweaters, aprons, well covered up. Priests and other "authentic" pilgrims were often dressed in *waraji* (straw sandals worn over the shoes to facilitate walking) and white tunics to symbolize purity of heart; a sash draped across the chest might identify the religious sect to which they belonged and express a slogan or two. The procession was indeed a sight to behold.

The five of us kept up a steady if exhausting pace for three hours until reaching our humble abode for the night at the 8th Station, fully 3,300 meters above sea level. From the 7th Station we had faced a steeper slope, thinner atmosphere and an icy wind the effects of which the sun had not helped to mitigate. It was therefore with genuine relief that we finally collapsed around the warm fires within the *ishimuro* (stone hut) in the midst of perhaps 100 others who were relaxed and singing. The hut—certainly no hotel—was not unlike the others we had encountered at previous stations, about nine feet high, made of stone and roofed with birch bark topped with rocks to keep it secure in the gale winds which constantly blew. *Tatami* (straw) mats lined the floors as well as a bunk area about chest-high level jutting out from the wall around half of the room. We staked out an area for sleeping and then prepared to feast on a well-earned dinner.

Out came the whisky, which we used to wash down a meal of *osenbei* (rice crackers), *misoshiru* (bean curd soup), *tsukemono* (pickled radish), *nori* (seaweed), rice, cheese, cookies, chocolate and various other delicacies—all taken with great relish, I might add. As more and more pilgrims reached the hut, for which reservations were necessary far in advance, the *sake* (rice wine) and whisky were passed around more often, along with Japanese tea which at this height cost ¥75 (20¢—usually free), and the singing and joking became more boisterous. I felt a great sense of communion among everyone present and, whether this was real or imagined, the evening was an exciting and unforgettable one. However, I could not last and finally conked out at around 9:30 p.m. on beautiful thick *futon* (mattresses) which I had never believed could feel so comfortable.

It must have been around 1:30 a.m. when rumblings in the stomach from the smorgasbord dinner woke me up; perhaps 100 dead-looking bodies were stretched out in various geometric patterns about the large two-room hut. Outside a steady line of people was passing by the windows, which were rattling from the wind like they would collapse any moment. These daring climbers had started their assault late in the afternoon and were climbing all night to reach the summit in time for sunrise, to save time or perhaps to escape from the heat of the day.

Gingerly making my way over bodies and out the flimsy door, into the icy wind, I watched the night pilgrims—as numerous as those during the day—mounting the steep path below and above in single file, with torches, flashlights or helmet lights to illuminate the way. It was a beautiful, clear night, the kind of night one usually only experiences out on the ocean; constellations of stars were easily distinguishable and far below I could see the lights of the towns skirting the base of Mt. Fuji. For some time



Sengen believers, dressed in white for purity of heart, make the climb often for religious purposes.

I talked to several students from Waseda University, as best I could in my faltering Japanese and their English, about subjects so remotely attached to Fuji as their university strife and the security treaty issue. Finally, they hurried on their way as the bodies within the shelter began coming to life.

Misplaced shoes and delayed breakfast held us up from making a beeline to the summit for *goraiko* (sunrise); but it was just as well, for we were able to watch the glorious sight leisurely from where we were, unencumbered by crowds of people. That high up, we could watch the molten ball creep over the horizon playing upon the wispy white clouds until it emerged in a final spectacular blaze of color. The sight was certainly worth the drudgery of the previous day's climb.

AT 5:30 in the full glory of morning we at last began the hardest part of the whole climb, the last stretch from the 8th Station to the summit. In the spirit of one meaning of Fuji's name—"Never Die"—we trudged ahead. With a yell of *banzai* we finally attained the summit of Fuji-san, after passing through the red *torii* (gate), girls first, at 6:45 a.m., having taken a total climbing time of 4¼ hours. No lightning or thunder, no *sake* celebration, we were just there. Not even a swanky hotel to take in the worn-out travelers. But the rewards for our achievement were many and varied just the same.

One gets his Fuji stick branded with the Japanese equivalent of "Health, Happiness and Prosperity— You Have Made It"; one gets to sit down again with a ¥150 (40c) cup of hot tea; and one can drink in the spectacular view, in between the moorish cloud covers, of all five lakes and the Alps in the distance.

But the thrill begins with exploration of the summit. Walking up a small incline toward Fuji's lone crater, a look back brings to mind the probable scene of one of Hannibal's Alpine camps. Hundreds of people carrying staves milled around the stone souvenir and refreshment shelters, some picnicked, some slept, and the mist periodically obscured all but the most colorful of flags and jackets.

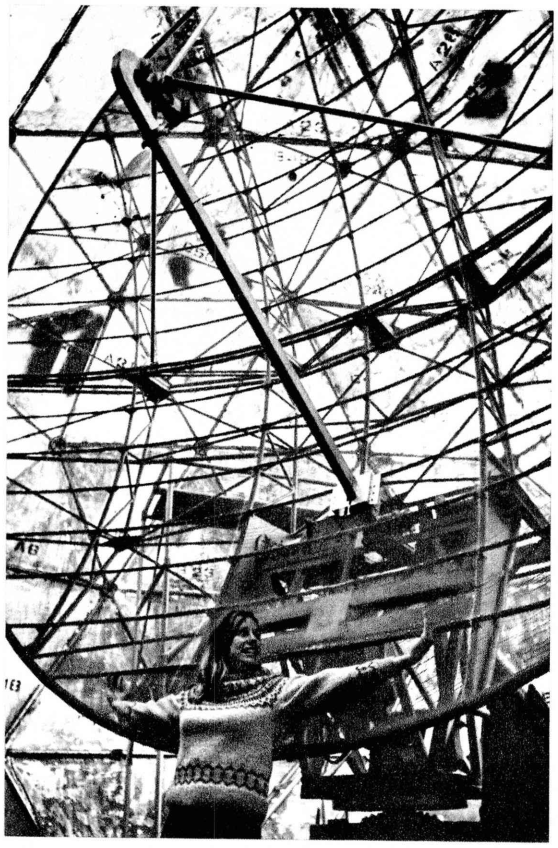
The crater itself, 700 meters across and surrounded by eight different peaks, is a place of special reverence known as *Nai-in* (Sanctuary). The sky had cleared and we were able to see to the bottom; the sides of the crater slope gently down 220 meters from the highest point on the mountain, Kengamine Peak. Following a path around the rim we came upon the sacred spring of *Gimmei-Sui* (Silver-Sparkling Water) which flows through the mountain. We donated some money to the priests and were given a cup of the water to drink. The effect was invigorating, and luckily so; for from there we proceeded to the top of Kengamine Peak, where rests the renowned Meteorological Observatory of Tokyo District Meteorological Agency, the highest weather station in the world.

It was a special treat indeed to be given a tour of the observatory, which is not ordinarily open to visitors, by Dr. Ryozo Tatehira, who spent last year doing research at the University of Chicago in the United States. He showed us the large (five meters in diameter —most others are three) parabola radar antenna which has been such a boon to weather observation in Japan. Used to gauge wind and rain intensity and velocity by means of radar echo cells, it has a maximum detection range of 800 kilometers with an altitude range of 10 kilometers. Six people man the station at all times, with a two-month leave in Tokyo every 20 days. In the summer, Dr. Tatehira told us, they approach the station by tractor from the base of the mountain; but in the winter, with snow falling continually, they go up 3,000 meters by caterpillar and continue the rest of the way on snowshoes. Needless to say, a calm, energetic man with nerves of steel would be the type of man most appropriate to this job, which frequently requires suffering temperatures of —30 degrees C and working quietly as typhoon winds of 90 meters per second rage around the build-

Would you believe the summit?! Sengen priests brand my trusty Fuji stick to prove it.



ing. A cloud mass resembling a gargantuan marshmallow provided a stunning sight as we left the station, and I asked the weatherman about it. Such cumulus clouds, he answered, expand to four kilometers wide and three kilometers deep and become the source of rain in the foothills below. Weather-wise these men seem omniscient, which I felt, too, watching the cloud preparing to inundate the people below.



The weather observatory's fabulous parabola radar antenna is five meters in diameter.



"Ringing in world peace"—oh, that it were so simple. The priests of the highest Sengen Shrine in Japan, dedicated to inspiring brotherhood among men, allowed me to sound off with exuberance which that bell had never known.

We expressed our thanks and made our way down the slope toward probably the highest Sengen Shrine in all of Japan. Here present-day Fuji-worshippers, absorbed into Shinto sects, pray to Konohana-sakuya-hime, the *daibosatsu* (guardian goddess) of the sacred mountain, for guidance in their daily conduct and business. The main shrine is lodged at Fujinomiya, at the "front entrance" to Mt. Fuji, but many still prefer to journey to the summit to worship. This particular shrine, explained the priest earnestly, was dedicated to promoting peace among men, and he pointed out the bell which was responsible for making their prayers heard. We promptly rang the bell with great vigor and, looking out over the world, or so it seemed, wished it could be accomplished by such a simple act. Before beginning our descent, I started to put some especially interesting lava rocks into my knapsack, when one of my friends jokingly related to me an old Japanese myth: Good fortune comes to those who take stones and earth to the summit because they increase Fuji-san's height, but the mountain gods curse those who take stones away. I wondered if the same applied to litter; for if so, many more blessings than curses had been bestowed.

At noon we started down the southeast side of Fuji by way of Mt. Hoei, and the scenery differed greatly from that of our trail going up. The first part of the path winds through big rocks seldom broken by vegetation. It was much to our glee, then, when we came upon a lone patch of snow, which we spent a good 20 minutes sliding around on. From around the 7th Station on, there lies 2¼ kilometers of black lava cinders, all the way down to the 2nd Station. Walking downhill in that, sinking ankle-deep with each step, could be one of the most exhausting forms of exercise ever, aside from going uphill in it, which fortunately is only done by tractors. The alternative is *sunabashiri* (sand-sliding), which is fast and fun as well. One simply runs, or else, as I did, one plants his trusty Fuji stick into the sand and vaults, which is the closest thing to skiing without snow (or water) that I have ever experienced.

Snowsliding, done obviously with the greatest of zeal,was an extra novelty during our descent.





We zoomed past Mt. Hoei, which itself is a giant sand dune, and with only one rest stop we arrived at Tarobo, which is the 2nd Station and the bus stop, at 4:00 sharp. Inch-deep in lava dust and with sore muscles to boot, we were only too happy to scramble into the bus—on which it was our fate to have to stand during the 45-minute ride to the Gotemba train station. Only on the train did we finally and completely relax, in expectation of the delightful *ofuro* (bath) we would soon enjoy.

Certainly the experience of climbing lovely Mt. Fuji, one of the most acclaimed if not climbed mountains in the world, was a memorable one; my Fuji stick is indeed a treasure. Still, in my estimation, Mt. Fuji is certainly nicer to look at that to be part of. I am reminded, moreover, of an old Japanese proverb: "He who climbs Mt. Fuji once is a wise man; he who climbs Mt. Fuji more than once is a fool." All due respect to the gods of the mountain, with this pearl of wisdom I must agree.

Sheridan Pressey, an American who lived in Japan first as a child, is presently working in Tokyo as Associate Editor of The Japan Times Weekly. Miss Pressey took her B.A. degree in international relations in 1968 from Goucher College in Baltimore, Md., where she was elected to *Who's Who Among Students in American Colleges and Universities.*

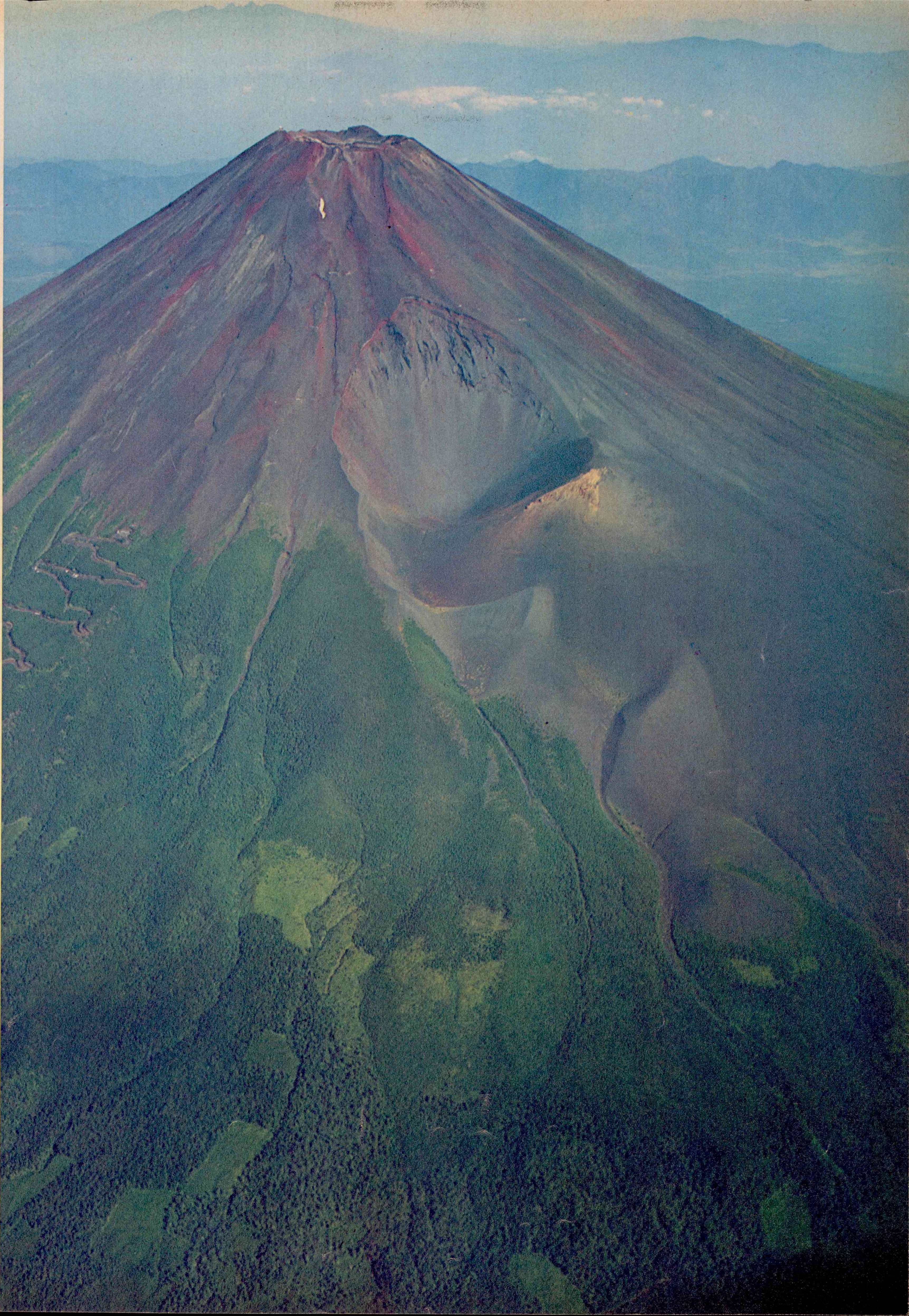


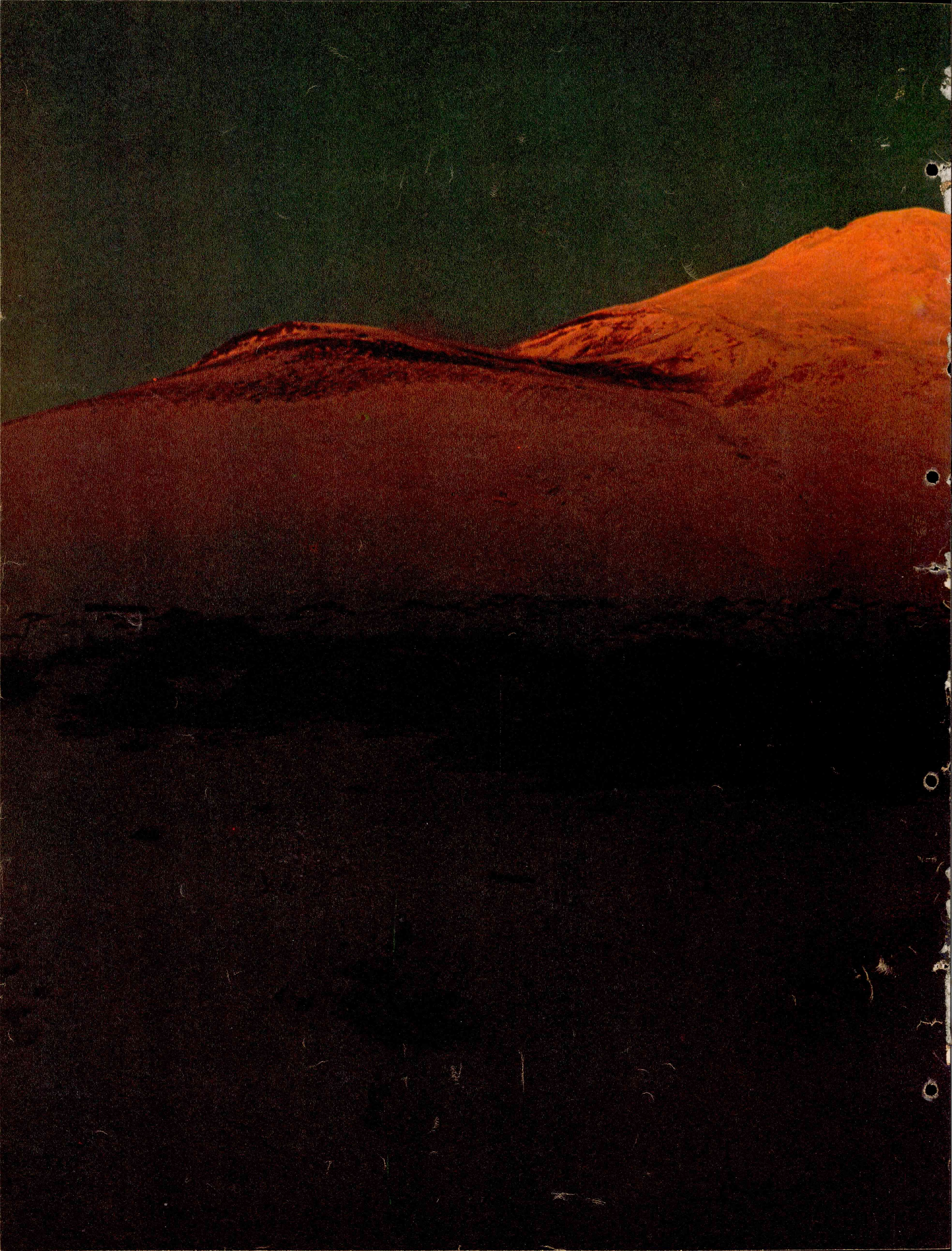
From a heavenly vantage point, my head in the clouds, I could drink in the magnificent panorama from the summit of the Five Lakes region and the Alps in the distance. Here, Lake Yamanaka curves gracefully below through the blue-green foothills.

NEVER THE SAME, ALWAYS BEAUTIFUL

Mt. Fuji in summer is an imposing figure. . . .
Mt. Fuji in winter, a shining dot in the distance. . . .
Whatever the season,
whenever the time and wherever the place,
all who see Mt. Fuji invariably experience
a refreshing sense of satisfaction.







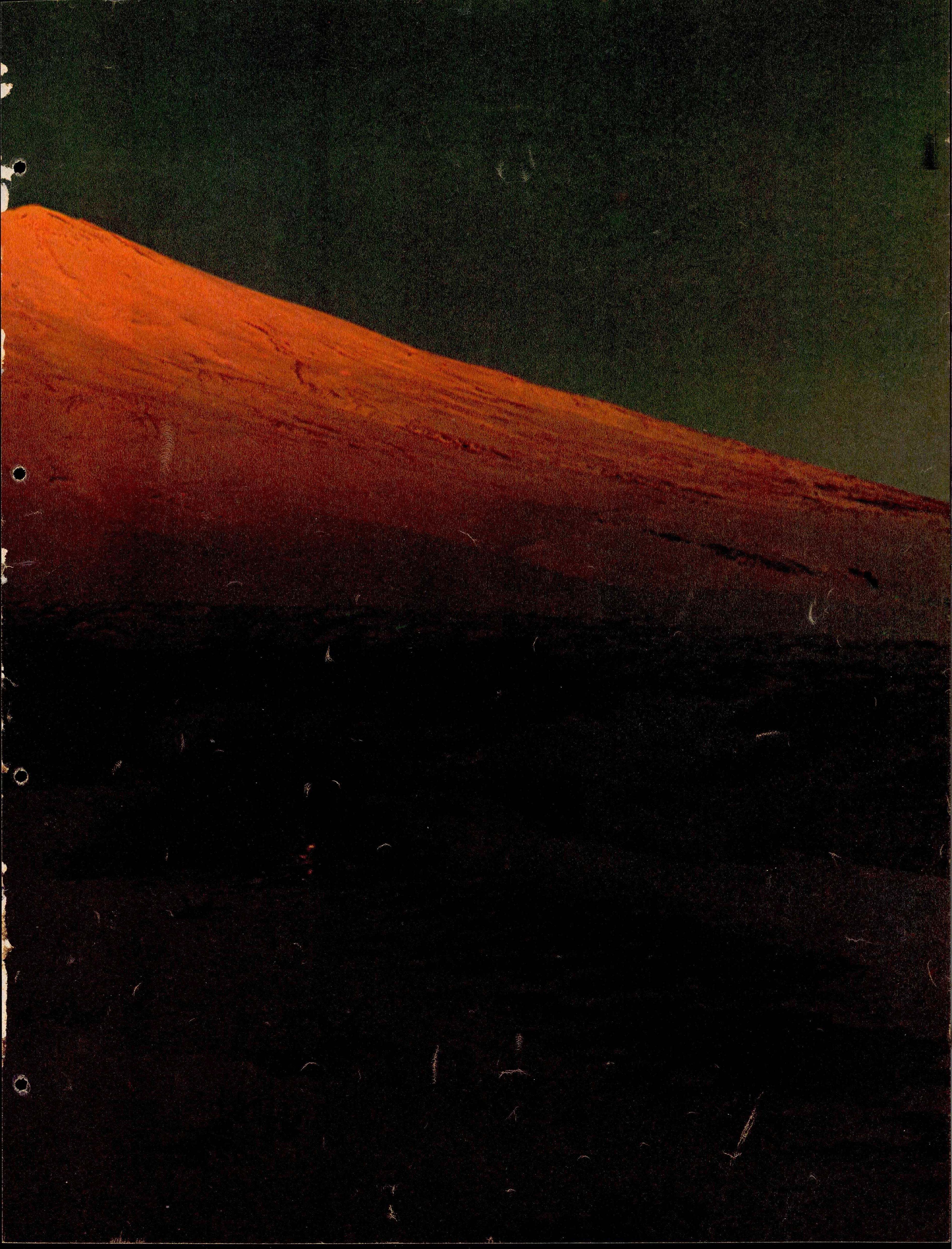














Photo explanations: P 30: Mt. Fuji in early autumn (aerial view). P 31: Mt. Fuji of midsummer as seen from an altitude of 4,000 meters. With the snow blankets gone, it bares the reddish brown skin of lava and volcanic ashes. The big crater on the mountainside is the Hoei Crater formed by the eruption of 1707. Since that eruption, Mt. Fuji has remained dormant. P 32: Mt. Fuji shining with the morning glow in the dead of winter. The photo shows the summit as seen from a height of 2,000 meters above the sea. P 34. In October, the snow-capped summit and the tinted foliage on the mountainside present a beautiful contrast. P 35: When viewed from afar, Mt. Fuji displays a smooth, pretty figure. But close at hand, it presents an unexpectedly rough surface to our surprise. P 36 and 38: Clouds of Mt. Fuji serve as setoff for the beautiful figure of the mountain. Mt. Fuji being an independent mountain is the best condition for creating clouds of varied shapes.

Photos by Takanori Ogawa
Saburo Yamamoto

FUJI-HAKONE SIGHTSEEING GUIDE

Guide to Hakone

Hakone boasts the most advanced network to roads among Japan's major tourist resorts, and convenient means of transport and lodging facilities are available. The mention of Hakone invariably reminds the Japanese of many spas in addition to beautiful sceneries of mountains, plateaus and lakes. Hot springs in the region are transparent and clean, and marked by a tranquil atmosphere. Each spa in the Hakone area is accessible by mountain railway, ropeway, bus, etc.

How to Reach Hakone

The simplest way to go to Hakone from Tokyo is by the "Romance Car" service of the Odakyu Electric Railway (Shinjuku to Hakone Yumoto: 1 hour and 20 minutes, 580 yen). There is also a high-speed bus service by the Tomei Expressway and other roads. (Odakyu "High-Speed Liner" service: 2 hours and 10 minutes, 610 yen). For further details, call 03-342-1751.

Where to stay

FUJIYA HOTEL
Ten minutes from Hakone Yumoto by car.
Tel. 0460-2-2211
HOTEL KOWAKIEN
Twenty minutes from Hakone Yumoto by car.
Tel. 0460-2-2222
HOTEL DE YAMA
Three minutes from Moto Hakone by car.
Tel. 0460-3-6321



"Romance Car" of Odakyu Line.



Fujiya Hotel.

Guide to Five Lakes of Fuji

The Five Lakes of Fuji, a noted tourist spot, form a key element of a national park centering on Mt. Fuji. They lie side by side at the foot of Mt. Fuji as if to surround the mountain from the south. They are called, from east to west, Yamanaka-ko, Kawaguchi-ko, Sai-ko, Shoji-ko and Motosu-ko. And each of them has characteristics of its own.

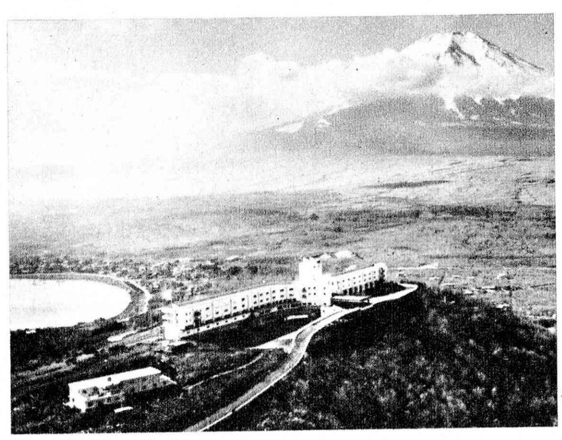
Regular sightseeing buses make the round of the five scenic lakes all the year round. Varied recreational as well as lodging facilities are available in the lake region throughout the year, including the Fuji highland golf links, skating rink, the comprehensive amusement center Fujikyu Highland, excursion ship services on the lakes and camping grounds.

How to Reach Five Lakes of Fuji

The most popular route from Tokyo to the Five Lakes of Fuji consists of a train ride on the Chuo Line of the national railways from Shinjuku to Otsuki, followed by an electric train trip from Otsuki to Lake Kawaguchi via Fuji-Yoshida. (Shinjuku to Lake Kawaguchi: two hours, 550 yen). There is also a de-luxe bus service with reserved seats from Shinjuku to the Five Lakes of Fuji. The buses make 11 round trips per day. Fare is 650 yen from Shinjuku to Lake Yamanaka and Lake Motosu. For details, call the Fuji Kyuko Telephone Center: 03-376-1111.

Where to stay

HOTEL MT. FUJI
Fifty minutes from Fuji-Yoshida Station (Fuji Kyuko Line) by car.
Tel. 05556-2-2111
FUJI VIEW HOTEL
Five minutes from Kawaguchi-ko Station (Fuji Kyuko Line) by car.
Tel. 05558-3-2511
KAWAGUCHI-KO HOTEL
Lake side of Lake Kawaguchi
Tel. 05557-2-1313



Hotel Mt. Fuji.

Guide to Ascent of Mt. Fuji

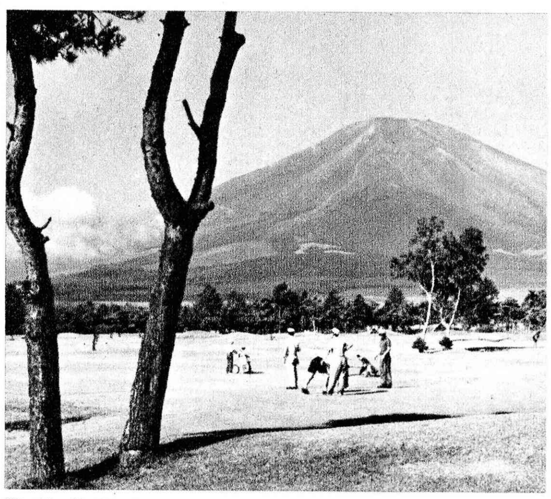
Mt. Fuji is already familiar to all people in the world as "Fuji-yama," and anybody fascinated by its beauty must wish to ascend it at least once in his lifetime. There is a mountain bus service up to two-thirds of its height, and from there, the summit is within four to five hours of walk. The most general way of climbing is to use an evening bus service from Tokyo to Fifth Station. And start from the Fifth Station around sunset to reach mountain huts at the Seventh and Eighth Stations late at night. After an overnight stay there, the ascent is resumed at daybreak, and the summit is reached around 6 or 7 a.m.

Lodging Facilities

There are many mountain huts on Mt. Fuji. Charges for overnight stay, common to all huts, are 1,200 yen with two meals and 700 yen without.

How to Reach Mt. Fuji

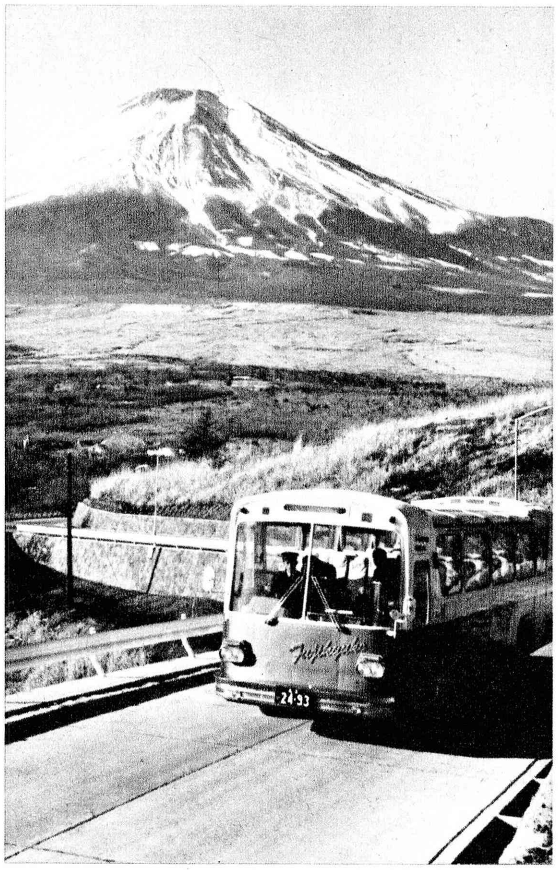
The same routes as those from Tokyo to the Five Lakes of Fuji may be used to reach Mt. Fuji. There are various courses for a trip from Tokyo to Mt. Fuji and back in a single day. There are also various starting points for the ascent of Mt. Fuji. If the "Subaru Line" motorway is used from Lake Kawaguchi, a comfortable ride can be enjoyed up to the Fifth Station. Moreover, the Omote-Fuji (front Fuji) Excursion Road will be opened in July this year. In that event, a smooth drive up to a height of 2,400 meters will become possible from Mishima Station, which can be reached by the superexpress New Tokaido Line. From that height, one can command an excellent panoramic view, including the Oshima in the Izu Islands on the Pacific Ocean.



Fuji Golf Course.

Package Tour

A package tour called "World Bus Fuji-Hakone Tour" convenient for foreign tourists is available at 20 dollars per day. It provides an excursion tour from Tokyo to Mt. Fuji and Hakone all the year round. For further details, contact Package Tour Section of the Japan Travel Bureau (03-211-2701).

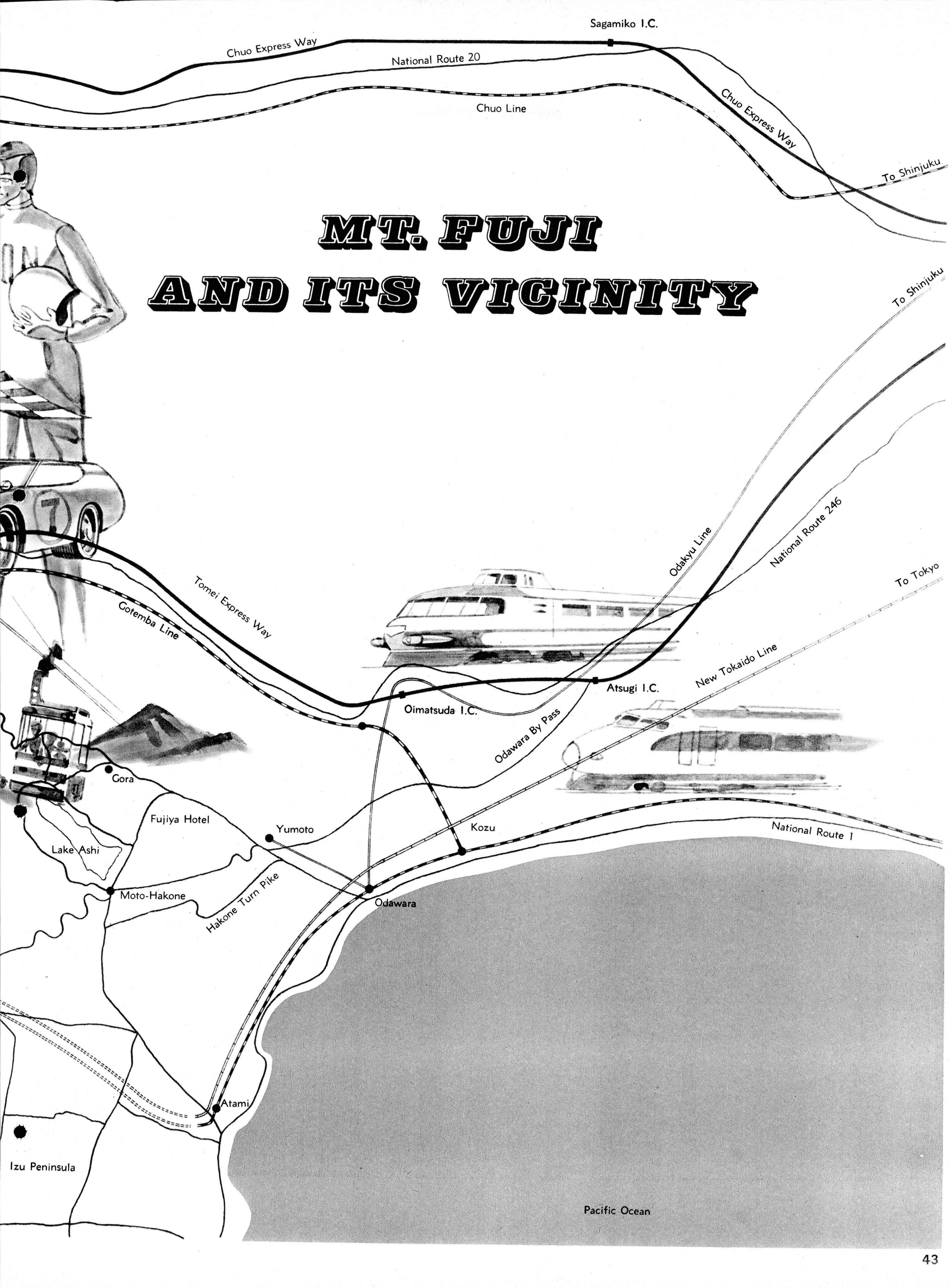


Fuji Kyuko's "World Bus."

TIPS ON SHOPPING & DINING IN TOKYO


Otsuki I.C.
Otsuki
Fuji-kyuko Line
Lake Kawaguchi
Kawaguchiko I.C.
Fujiyoshida
Fujikyu
High Land
Lake Sai
Lava caves
Aokigahara
Lake Shoji
Lake Motosu
Fuji Subaru Line
Highest point
in Japan
3,776 meters
Mt. Fuji
Hotel Mt. Fuji
Lake Yamanaka
Fuji Golf Course
Mt. Fuji Skiing Center
Fifth Station
Asagiri Highland
National Route 138
Fuji Speedway
Omote-Fuji Excursion Route
Gotemba
Gotemba I.C.
Nihon Land
Shiraito Falls
National Route 139
Fujinomiya
Fuji I.C.
Tomei Express Way
Numazu I.C.
Mishima
Fuji
Numazu
New Tokaido Line
To Osaka
Shimizu
Osezaki Cape
Nihon Daira
Miho-no-Matsubara
Pacific Ocean

MT. FUJI AND ITS VICINITY



1970 MODELS OF JAPANESE

Japan's automobile industry, boasting the second largest output in the world, keeps on growing steadily, apparently entering a period of full maturity. In 1969, it turned out an estimated 4,500,000 units (four-wheelers), far exceeding the previous year's production, while automobile exports also scored a jump of about 200,000 units to an estimated 800,000 units. The proportion of passenger cars in the total auto production has surpassed the 50 per cent mark, showing a steady shift to the Western pattern of production. Already, Japanese automakers measure up to top international standards in the performance and styling of passenger cars, especially those with a displacement of 2,000 cc or less.

Nevertheless, the Japanese automobile industry, which has grown to become a major pillar of the national economy in a short period of time, now finds itself in a severe environment that does not permit it to enjoy prosperity comfortably. In the past, Japan often came under attack abroad for not clarifying the date for liberalization of direct foreign capital investment in the domestic automotive industry. But now, the decontrol has been set for the autumn of 1971, and the day is thus approaching fast when Japanese automakers will have to compete squarely with their big foreign counterparts, such as General Motors, Ford, Chrysler, Volkswagen and Fiat.

In the meantime, the so-called "traffic public hazards," such as increasing traffic accidents and air pollution by exhaust fumes, are assuming serious proportions with the spread of "motorization." As a result, automakers are now exposed to growing demands and criticisms from society in general.

Such a severe environment was vividly reflected in the 16th Tokyo Motor Show, the top stage for showing off the 1970 models, held at Harumi, Tokyo, for two weeks from last October 24, attracting 1,400,000 visitors. Each automaker devoted major energies to publicizing the safety and international features of the 1970 models. Incidentally, it was the last motor show dedicated to Japanese-made cars alone. From this year, it will be replaced by a larger motor show encompassing both Japanese and foreign cars to better suit the new age of internationalization.

Introduced here are the highlights of the 16th Tokyo Motor Show and representative 1970 models of Japanese passenger and sports cars.



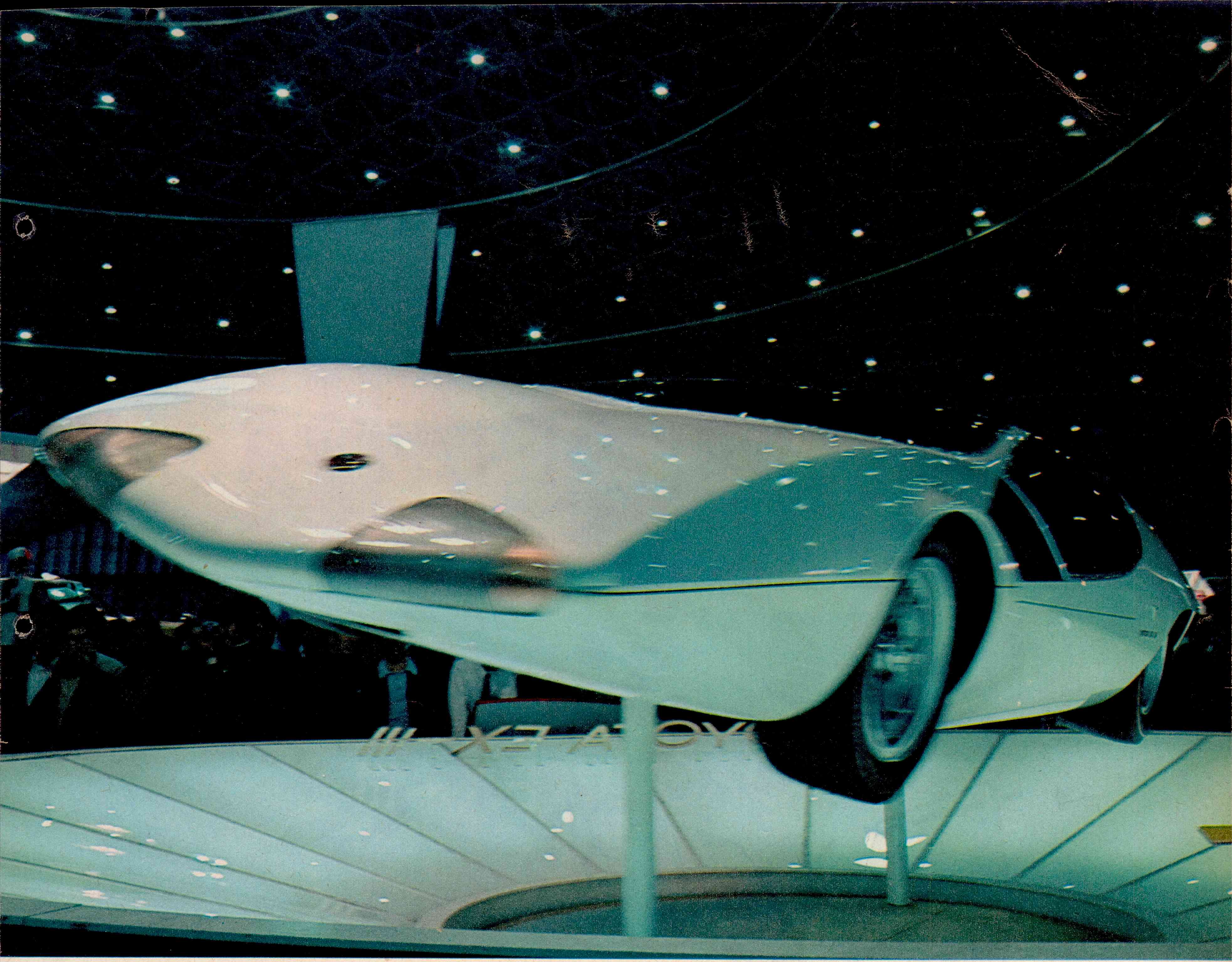
Photos by NOBUAKI FUKUI (P44-P48)

PASSENGER AND SPORTS CARS



Nissan's new model "Datsun 240Z Sports."

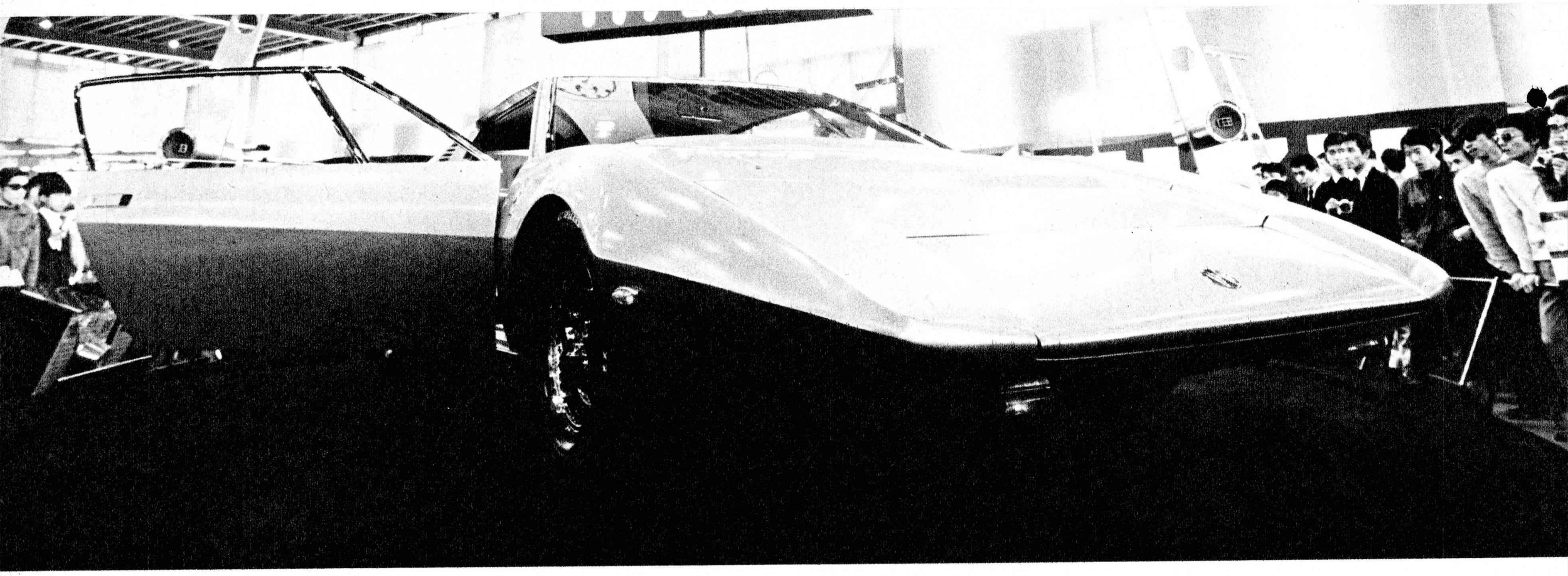

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432





At the motor show, automobile fans are fascinated by the smooth, charming lines of the beautifully illuminated new models and experimental cars, on which automakers have staked their future. Opposite page is Nissan's new Datsun 240z Sports, while Mitsubishi's new model, Colt Galant, is at left and Toyota's "Dream Car" (mounting no engine) is above.

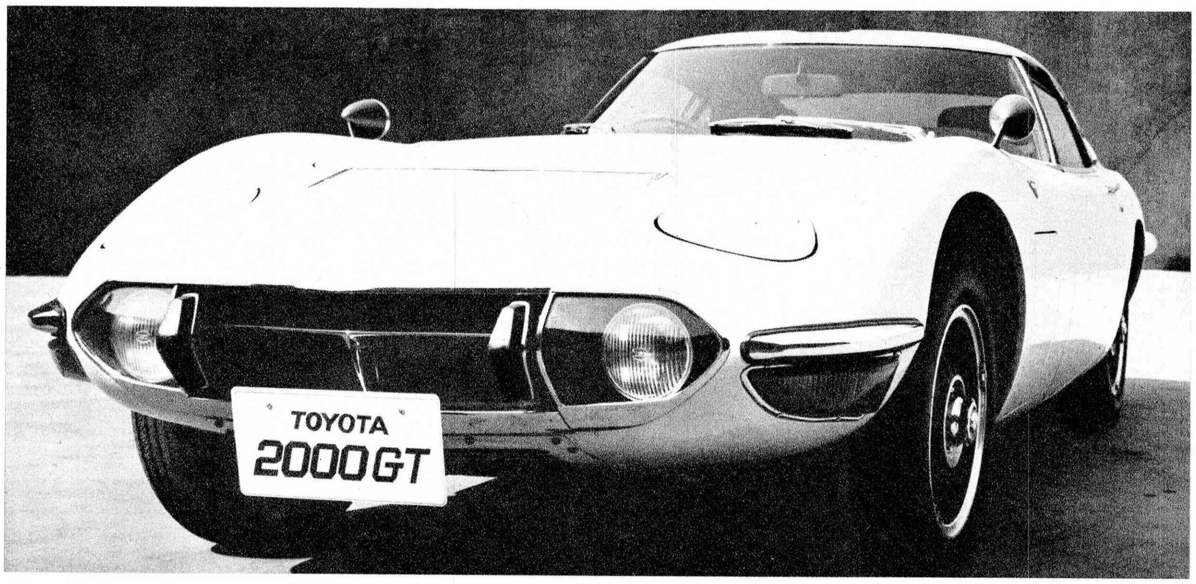
Isuzu's prototype displayed at the 16th Tokyo Motor Show.



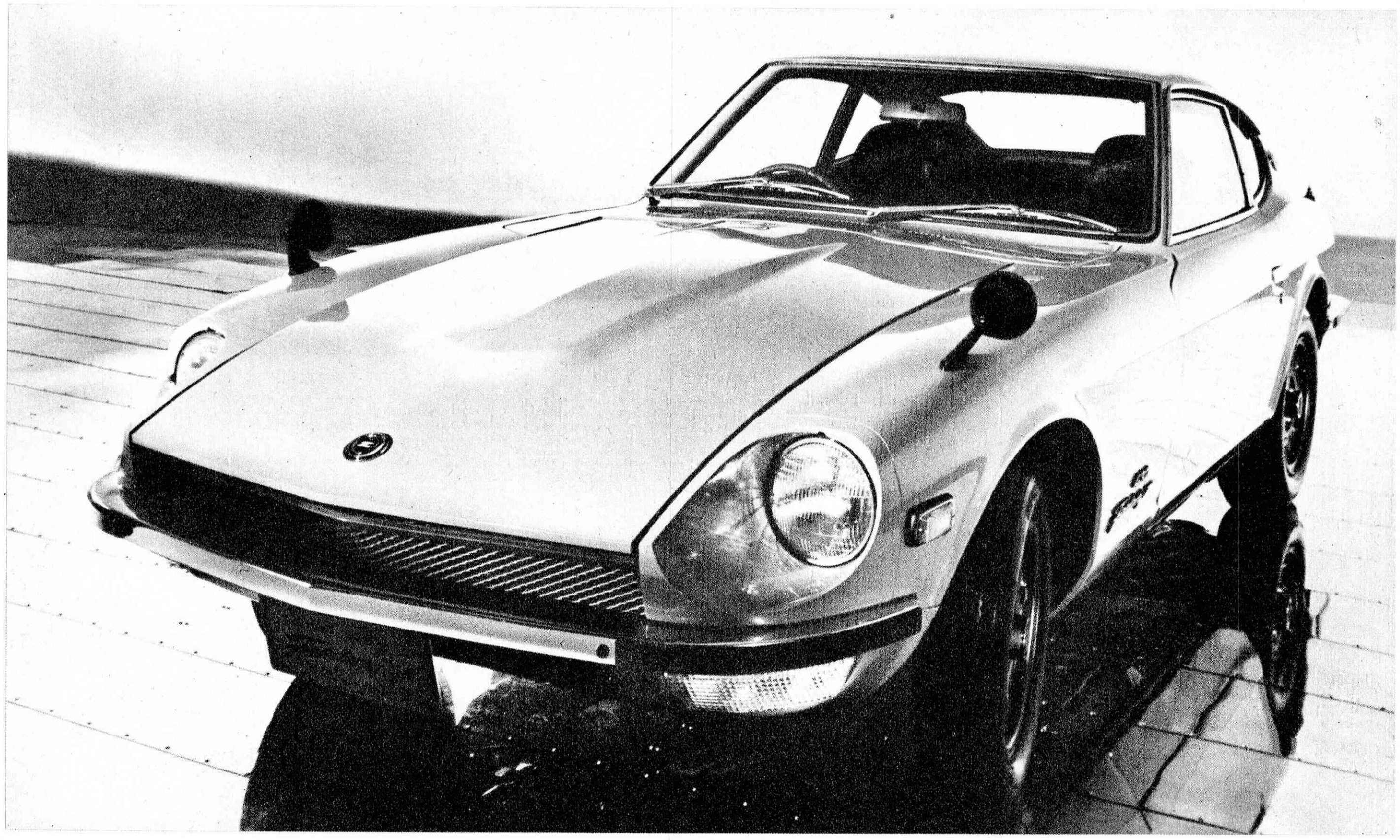


Mitsubishi's new model "Colt Galant."

SPORTS CARS



TOYOTA 2000 GT
Engine displacement: 1,988 cc; 6-cylinder. Maximum output: 150ps/6,600rpm. Maximum speed: 215km/h. Domestic price: ¥2,385,500. (Toyota Motor).



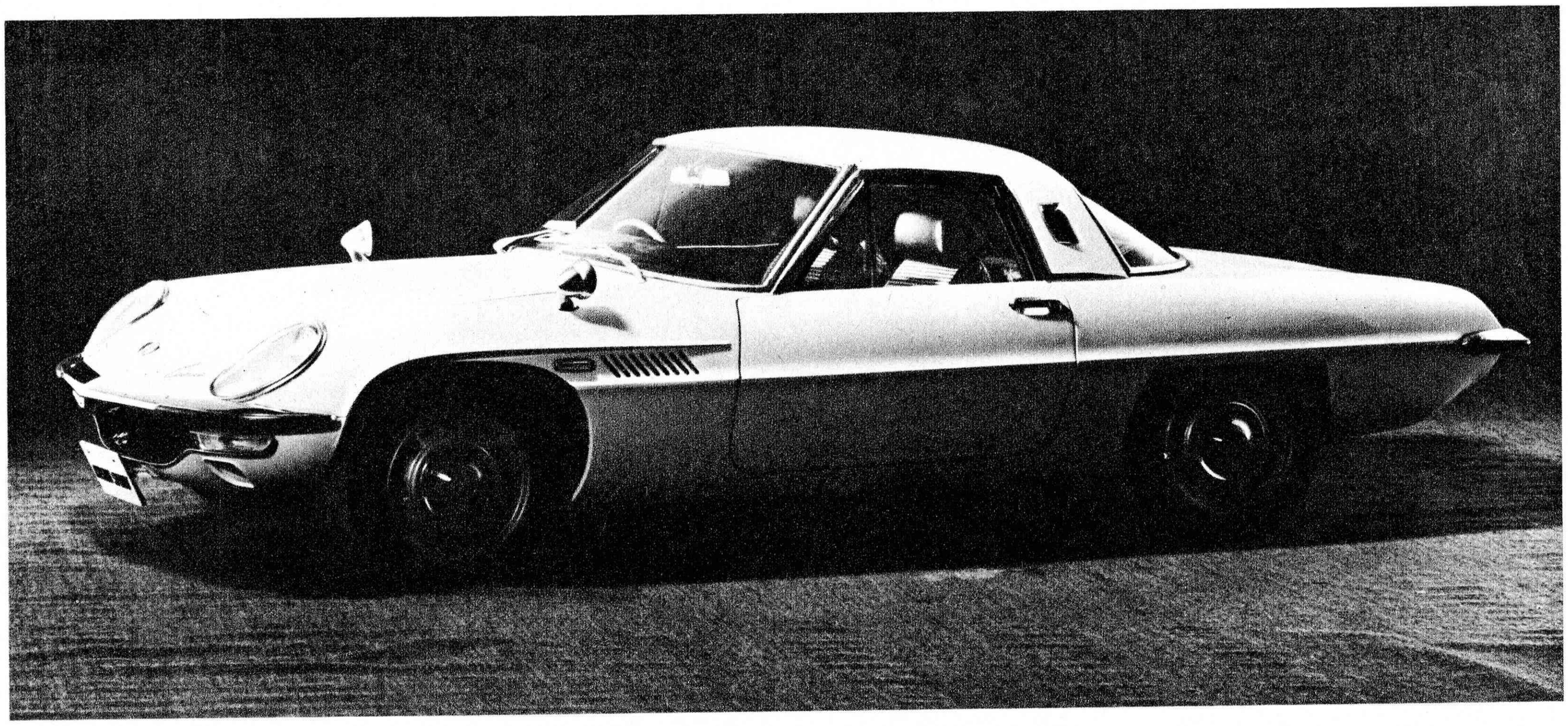
DATSUN 240Z SPORTS
Engine displacement: 1,989 cc; 6-cylinder. Maximum output: 160ps/7,000rpm. Maximum speed: 210km/h. Domestic price: ¥1,850,000. (Nissan Motor).



NISSAN SKYLINE 2000 GT-R
Engine displacement: 1,989 cc; 6-cylinder. Maximum output: 160ps/7,000rpm. Maximum speed: 200km/h. Domestic price: ¥1,500,000. (Nissan Motor).



ISUZU 1600 GT-R
Engine displacement: 1,584 cc; 4-cylinder. Maximum output: 120ps/6,400rpm. Maximum speed: 190km/h. Domestic price: ¥1,160,000. (Isuzu Motor).

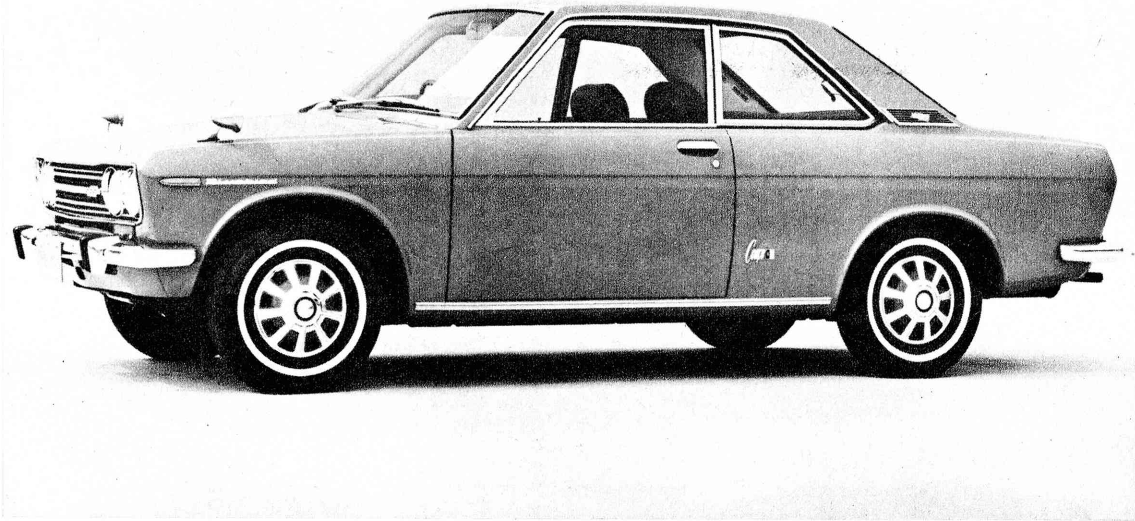


MAZDA COSMO SPORT
Engine displacement: 491 cc × 2 (rotary engine). Maximum output: 128ps/7,000rpm. Maximum speed: 200km/h. Domestic price: ¥1,580,000. (Toyo Kogyo).

SPORTY CARS

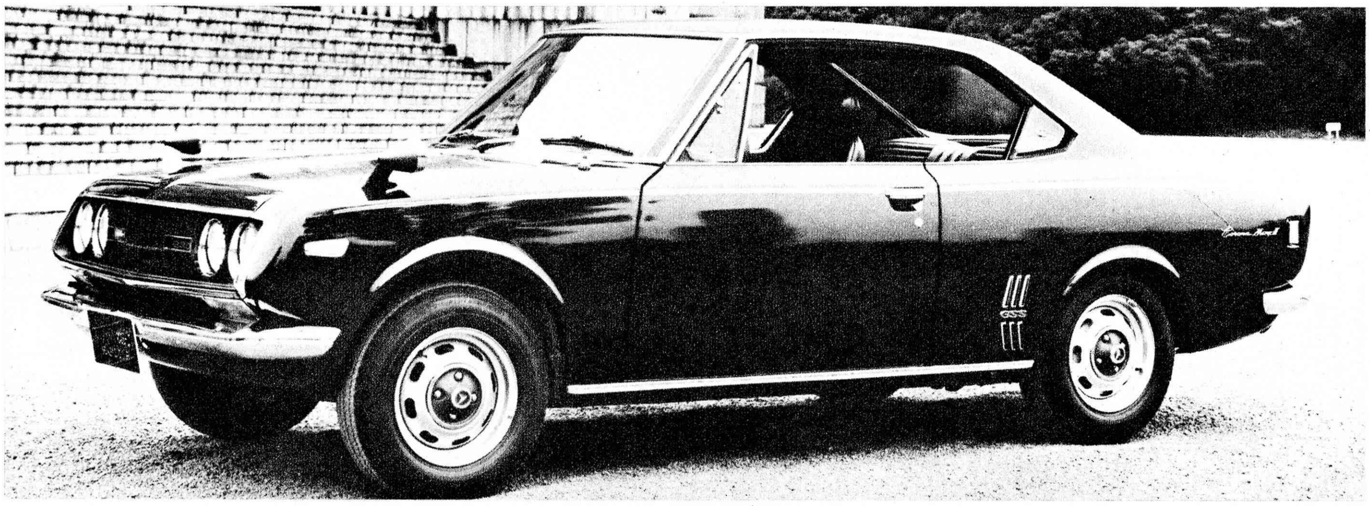


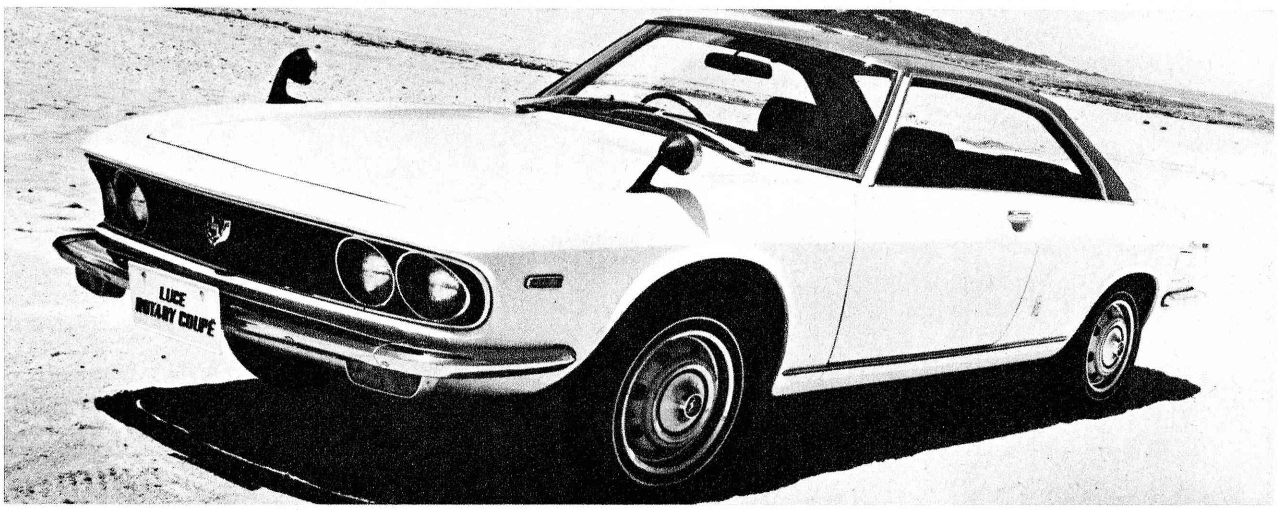
ISUZU 117 COUPE
Engine displacement: 1,584 cc; 4-cylinder. Maximum output: 120ps/6,400rpm. Maximum speed: 200km/h. Domestic price: ¥1,720,000. (Isuzu Motor).



DATSUN 1600 SSS COUPE
Engine displacement: 1,595 cc; 4-cylinder. Maximum output: 100ps/6,000rpm. Maximum speed: 165km/h. Domestic price: ¥738,000. (Nissan Motor).

CORONA MARK II HARDTOP GSS
Engine displacement: 1,858 cc; 4-cylinder. Maximum output: 140ps/6,400rpm. Maximum speed: 200km/h. Domestic price: ¥1,055,000. (Toyota Motor).





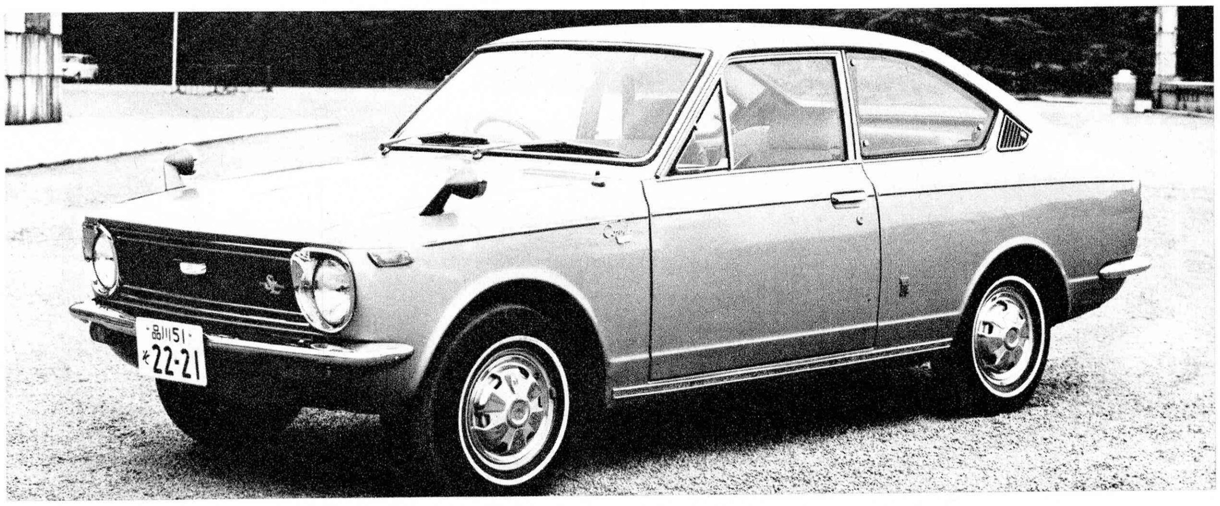


MAZDA LUCE ROTARY COUPE SUPER DELUXE
Engine displacement: 655 cc × 2 (rotary engine). Maximum output: 126ps/6,000rpm. Maximum speed: 190km/h. Domestic price: ¥1,750,000. (Toyo Kogyo).

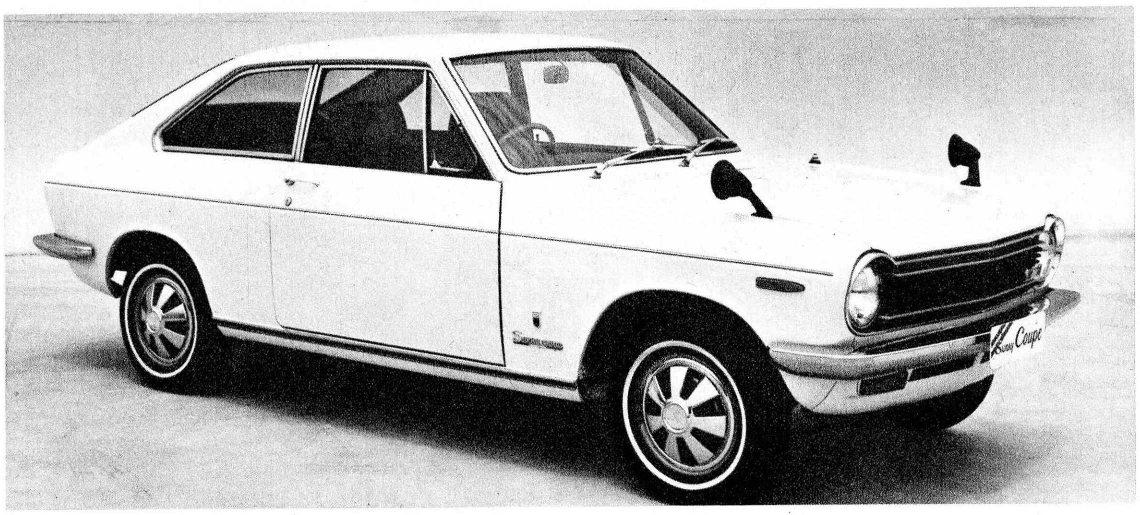
SUBARU FF-1 SUPER TOURING
Engine displacement: 1,088 cc; 4-cylinder. Maximum output: 77ps/7,000rpm. Maximum speed: 160km/h. Domestic price: ¥680,000. (Fuji Heavy Industries).



COLT GALANT AII GRAND SPORTS
Engine displacement: 1,499 cc; 4-cylinder. Maximum output: 105ps/6,700rpm. Maximum speed: 175km/h. Domestic price: ¥711,000. (Mitsubishi Heavy Industries).



TOYOTA SPRINTER SL
Engine displacement: 1,166 cc; 4-cylinder. Maximum speed: 160km/h. Maximum output: 77ps/6,600rpm. Domestic price: ¥594,000. (Toyota Motor).



DATSUN 1000 COUPE GL
Engine displacement: 988 cc; 4-cylinder. Maximum output: 60ps/6,000rpm. Maximum speed: 140km/h. Domestic price: ¥535,000. (Nissan Motor).

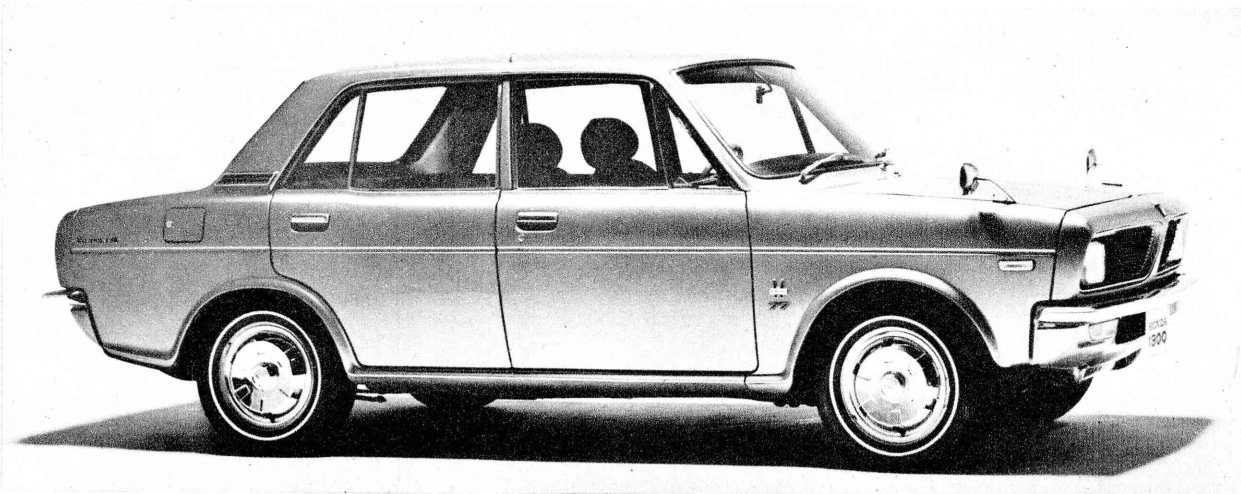
PASSENGER CARS

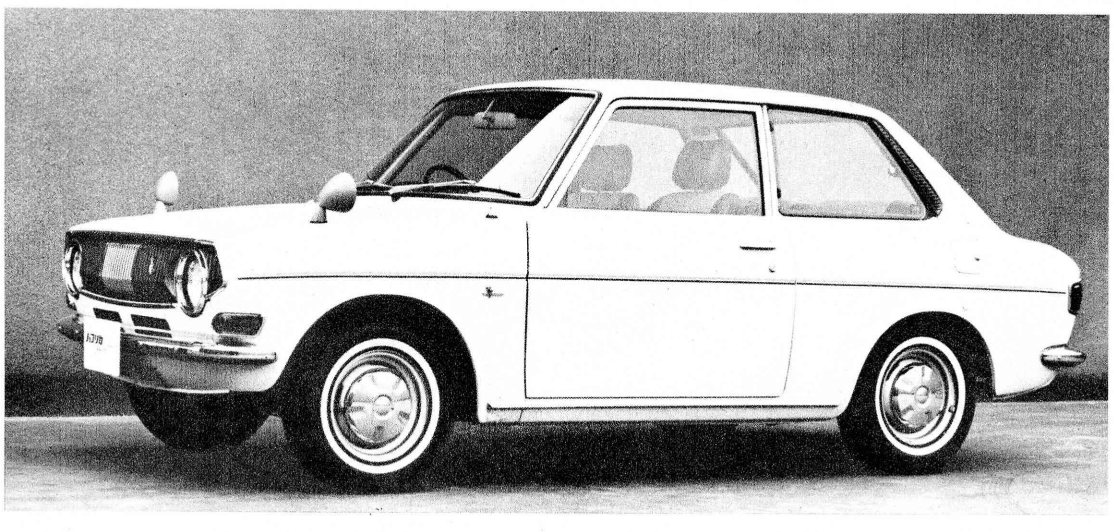


TOYOTA CROWN SUPER DELUXE
Engine displacement: 1,988 cc; 6-cylinder. Maximum output: 115ps/5,800rpm. Maximum speed: 160km/h. Domestic price: ¥1,127,500. (Toyota Motor).



DATSUN 2000 SPECIAL 6
Engine displacement: 1,998 cc; 6-cylinder. Maximum output: 130ps/6,000rpm. Maximum speed: 170km/h. Domestic price: ¥1,145,000. (Nissan Motor).





HONDA 1300 77 DELUXE
Engine displacement: 1,298 cc; 4-cylinder. Maximum output: 100ps/7,200rpm. Maximum speed: 175km/h. Domestic price: ¥576,000. (Honda Motor).

TOYOTA 1000 DELUXE
Engine displacement: 993 cc; 4-cylinder. Maximum output: 58ps/6,000rpm. Maximum speed: 135km/h. Domestic price: ¥482,000. (Toyota Motor).



ISUZU FLORIAN 1600 SUPER DELUXE
Engine displacement: 1,584 cc; 4-cylinder. Maximum output: 90ps/5,400rpm. Maximum speed: 155km/h. Domestic price: ¥890,000. (Isuzu Motor).



Giant construction machines are used in the Kashima project. Scrapers running about with a roar have also huge tires with a diameter of two meters, dwarfing workers.

BARREN DUNES BECOMING GIANT INDUSTRIAL COMPLEX

KASHIMA COASTAL INDUSTRIAL AREA TAKES SHAPE

The Kashima Dunes lapped by the rough waves of the Pacific Ocean—only 80 kilometers northeast of Tokyo, was mostly a barren area until recently without a trickle of industrial production. Here, an ambitious project is now making smooth headway to create an industrial port capable of accommodating 200,000-ton tankers and a vast coastal industrial complex with a population of 300,000, which could turn out varied products worth 1,400,000 million yen (3,900 million dollars) a year. By the time the project is completed in 1975, the biggest such facilities in Japan and the world will come into being one after another—Japan's biggest port, the world's largest oil refinery, biggest blast furnace, etc. Iron towers rising high into the sky to support supervoltage power transmission lines, swarms of dump trucks on the roads, giant cranes lifting heavy chunks of iron and steel, whirring dredgers on the sea . . . Amid the bustle and hustle, a new industrial base is revealing the whole of its shape now seven years after the project began in 1963.

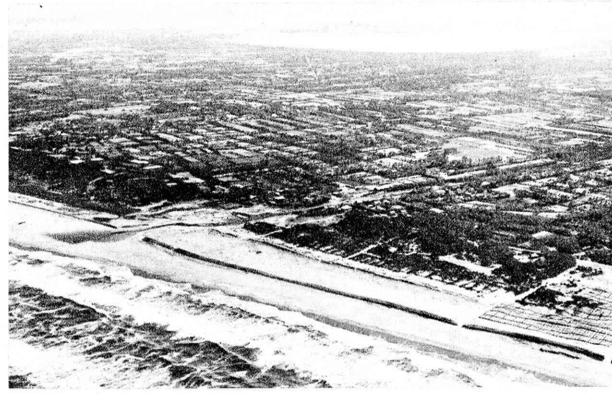
Photos by MASAMICHI SUMIYOSHI

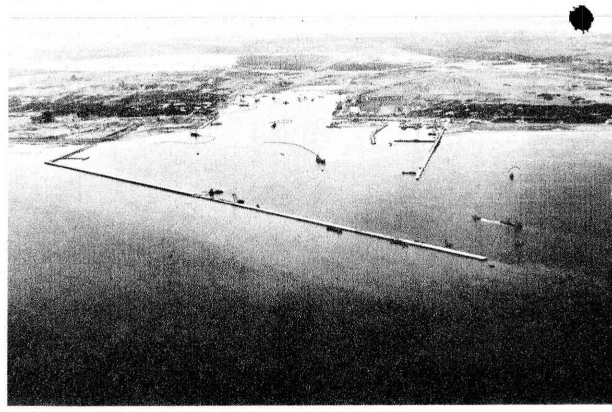


THE new Port of Kashima has been cut into the vast, monotonous shoreline of the Kashima-nada coast. It was in 1962 that plans were completed to fashion a coastal industrial complex here, Ibaraki Prefecture, as part of the Comprehensive National Land Development Program. First, work was started in 1963 to build Kashima Port as a keystone of the projected industrial zone. When a port is built, the usual practice is to construct wharves and other facilities on the sea. In Kashima, however, a "digging-in" system has been adopted to cut a waterway into the land on which to build various facilities. At the moment, a Y-shaped fairway is being dug from the sea into the land. To date, 1,050,000 workers and a sum of more than 20,000 million yen have gone into the port project. So far completed are breakwaters with a total length of five kilometers to arrest the rough waves of the Pacific and a waterway 1,200 meters long, 600 meters wide and 16 meters deep, which will form part of the central fairway. Last October, a ceremony was held to formally open the port, and already, 20,000-ton ocean-going freighters are calling there. In April 1970, a berth capable of accommodating 100,000-ton tanker will be completed.

Upon completion of the port, its berths will have an aggregate length of 17 kilometers or the longest in Japan, along which as many as 100 ships of 10,000-tons can berth at a time. The amount of cargo to be handled at the port is estimated at 80 million tons a year—1.6-fold compared with Yokohama Port, which now ranks first in Japan in point of cargo handling,





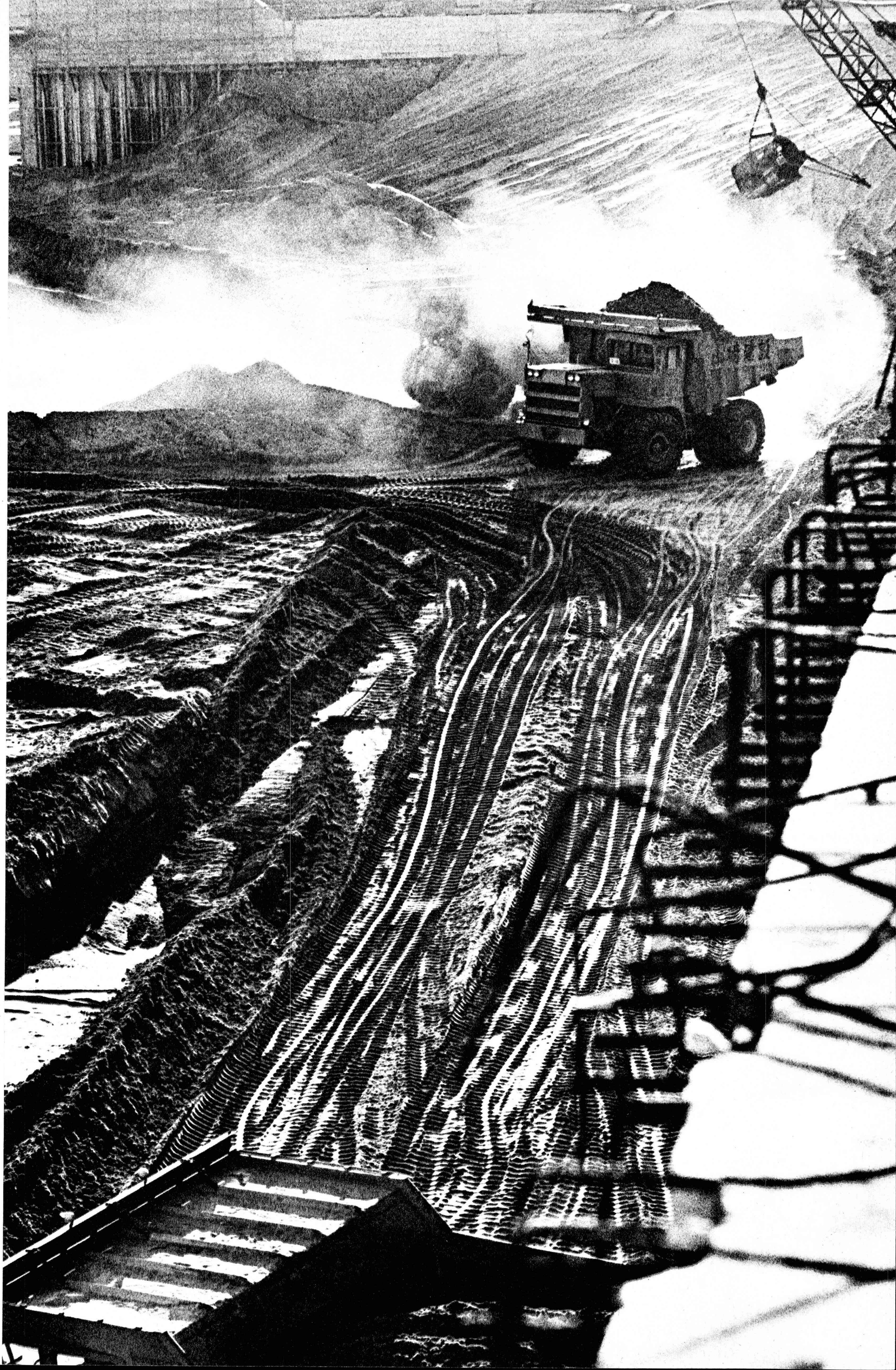


Kashima-nada coast in 1963 and in 1969. (Photos by Ibaraki Prefecture)

and twice and thrice as much as Kobe and Tokyo Port, respectively. Kashima Port will thus become the biggest industrial port in this country. Furthermore, the depth of water will be 21 to 23 meters in the outer port and 16 meters in the central fairway—that is, deeper than such major ports as New York, Amsterdam, Yokohama and Kobe and both the Panama and Suez Canals. It will thus be the deepest "dug-in" port in the world, capable of berthing 200,000-ton tankers.

MEANWHILE, the construction of factories in the industrial zone surrounding the port is also progressing at full blast. A total of 31 first-class enterprises have decided to build plants in the area for production of diverse commodities, ranging from iron and steel, petroleum refining and petrochemicals to machinery, foods and synthetic fibers. Of

Left: In the outer port, dredging work is in progress to increase the depth to 23 meters. Right: South Pier under construction. Wheel tracks of trucks form a geometric pattern





Right: Earth and sand, scraped up in the port, are sent to reclamation areas by big iron pipes. Seen in the background are frame towers of dredgers. Below: Already 20,000-ton-class ocean-going ships are calling at the partially completed Kashima port.



these, 14 firms—namely, two firms forming an iron and steel complex led by Sumitomo Metal Industries, Ltd., 11 of a petrochemical complex centering on Mitsubishi Petrochemical Co., and Tokyo Electric Power Co.—have already started to build their factories. They are virtually staking their destiny on the construction of new production bases in the Kashima area. The remaining 17 companies will commence construction work by this spring.

Sumitomo Metal Industries, set to build up an integrated steel complex, has already completed a hot strip mill (annual production capacity: 3 million tons). The mill started producing steel sheets last April as the first plant to go into operation in this new industrial zone. In September, construction work was launched on Blast Furnace No. 1 with an inside volume of 3,100 cubic meters or the largest in the free world. Then a butt-welded pipe mill (annual production capacity: 240,000



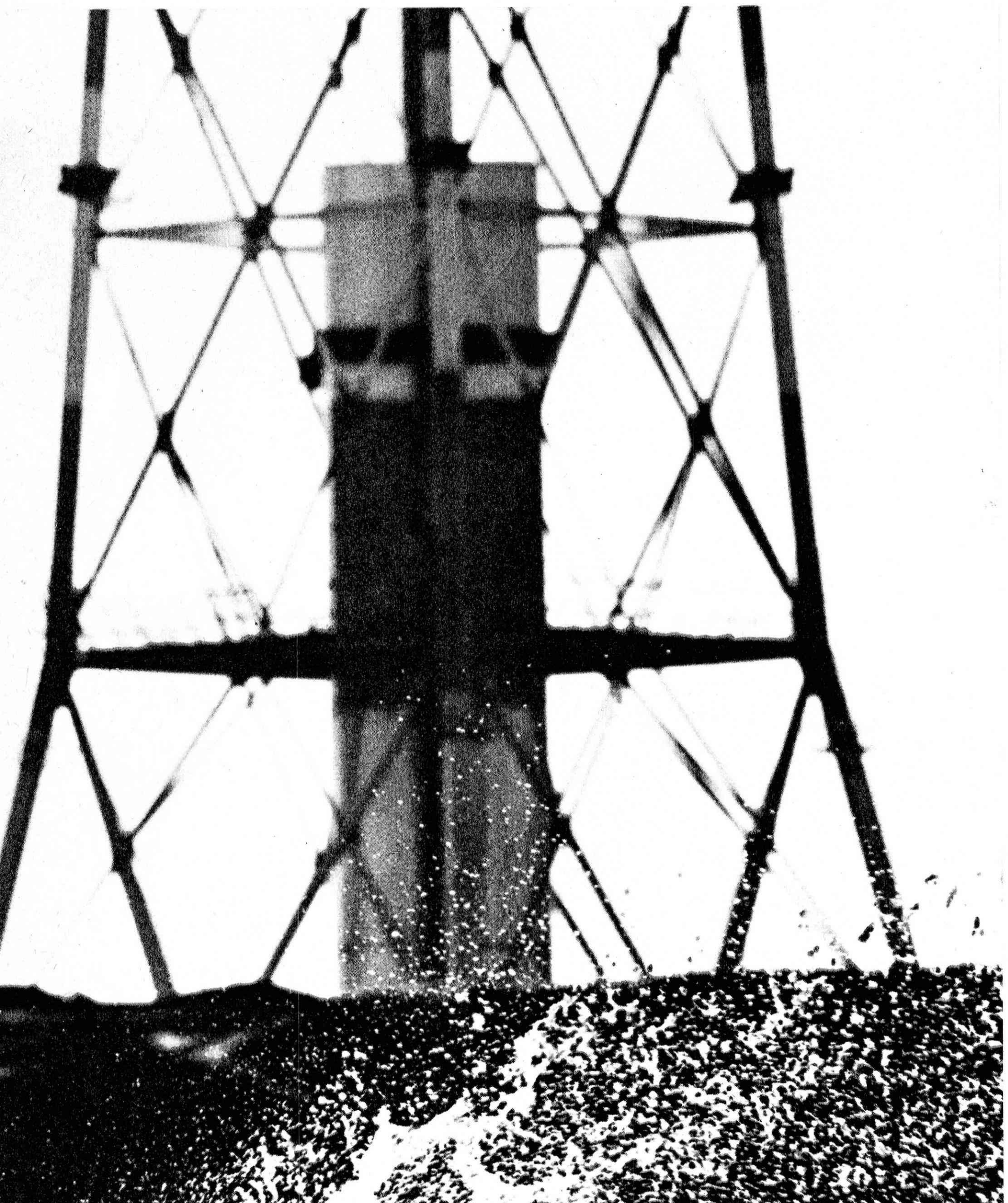
tons) went into operation to turn out such products as gas and construction pipes.

At the moment, the iron and steel complex project is forging ahead among various industrial projects planned for the Kashima region. But as for the petrochemical complex project, Kashima Oil Co. will put into operation from April an oil refinery capable of processing 120,000 barrels of crude oil a day. And by summer, Mitsubishi Petrochemical, set to produce 200,000 tons of ethylene a year in the zone, will also commence production. Incidentally, when all oil refining facilities in the Kashima area are completed, the daily processing capacity will reach 600,000 barrels, or the highest in the world.

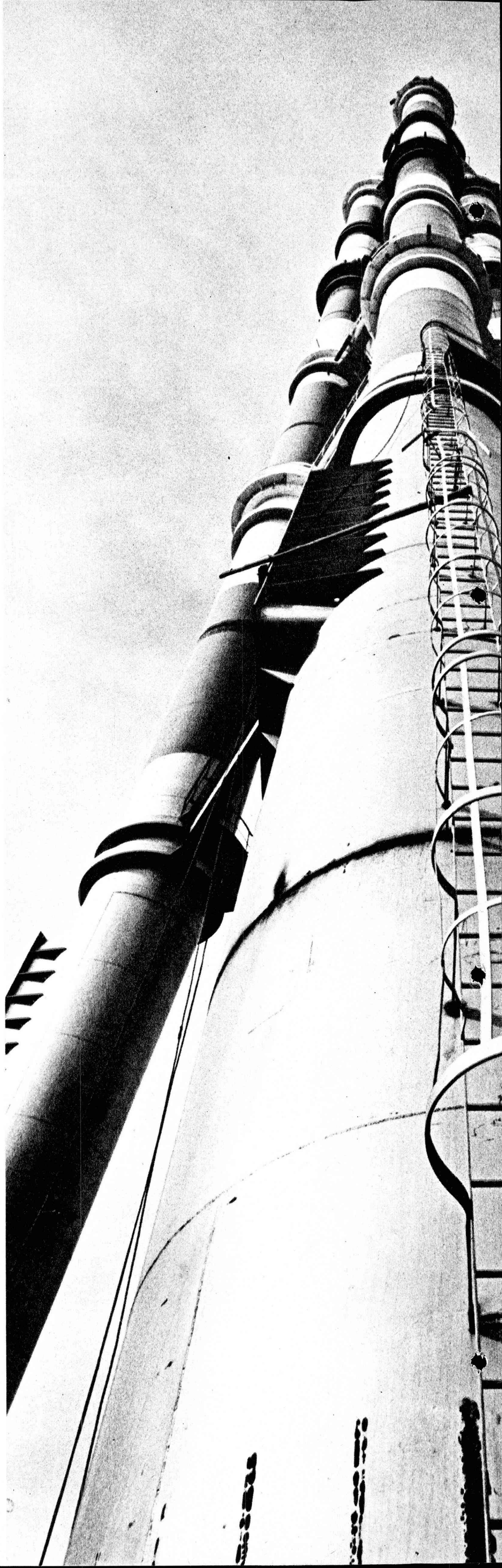
IN the meantime, various facilities to support these mammoth plants are also being constructed at a smooth pace. A giant industrial water supply system and a joint sewage disposal facility, both the largest in Japan, have been partially completed, while 275,000-volt super-voltage power transmission lines have been set up over a distance of 75 kilometers from Noda, Chiba Prefecture, to the Kashima zone. Construction work on two railroads with a total length of 90 kilometers is also making smooth headway with their partial opening expected by the end of this year.

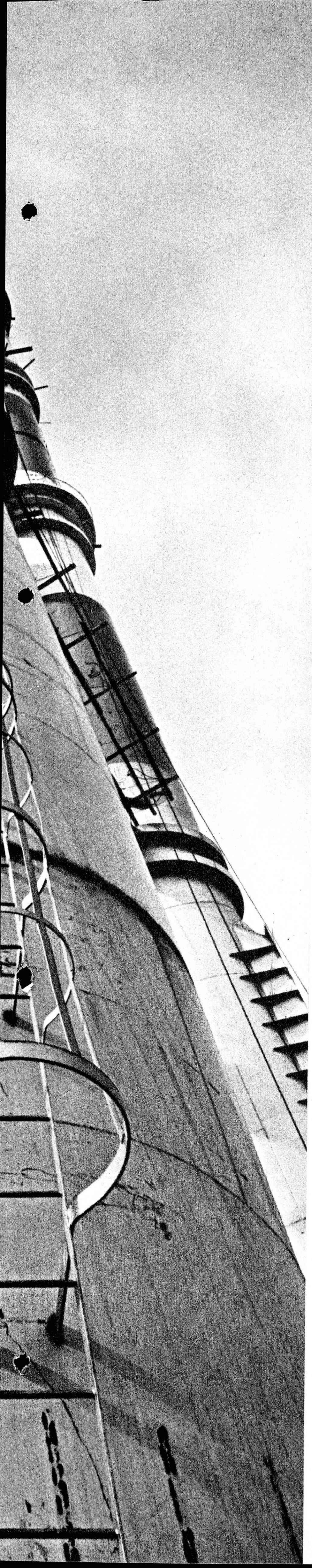
By the time the whole of the Kashima industrial development project is completed in 1975 and all factories in the region start full operation, the number of workers will climb to 70,000. If their families, shop operators and employes, Government officials concerned, etc. are included, the total population of the Kashima industrial zone is expected to rise to 300,000. To take care of such a massive influx of population, urban development projects are making steady progress in the areas adjoining the industrial zone to build an ideal city free from environmental pollution due to industrial activity. To cite educational facilities as an example, 11 senior high schools, 18 junior high schools, 35 elementary schools and 51 kindergartens will be newly established by 1975.

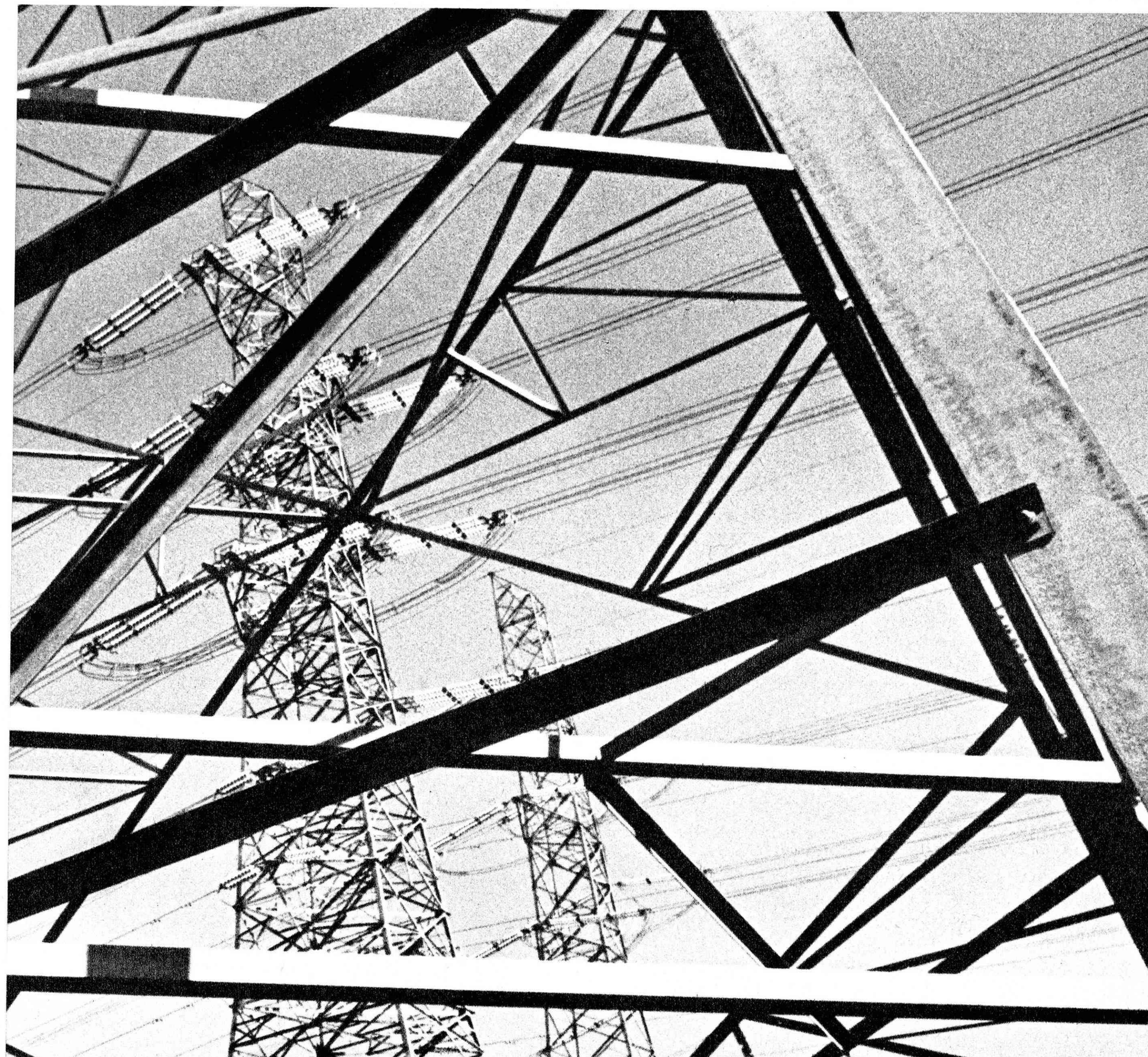
The Kashima development project, spanning as long as 13 years and requiring a colossal investment of 1,200,000 million yen—200,000 million yen in public investments and 1,000,000 million yen in equipment investments of participating enterprises—will eventually give birth to a mammoth industrial zone comparable to the Yokohama-Kawasaki industrial area. And with the advent of the 1970's, the project is now going into full swing. The once barren dunes of Kashima are changing their faces day by day as if to symbolize the ebullient energies of the ever-growing Japanese economy.



A spray of water in the reclamation area. In the background is a chimney of a thermal power station now under construction.







Left: An assembly of smokestacks, a symbol of a petrochemical complex. The height is 150 meters. Above: Iron towers rise to support supervoltage power transmission lines.

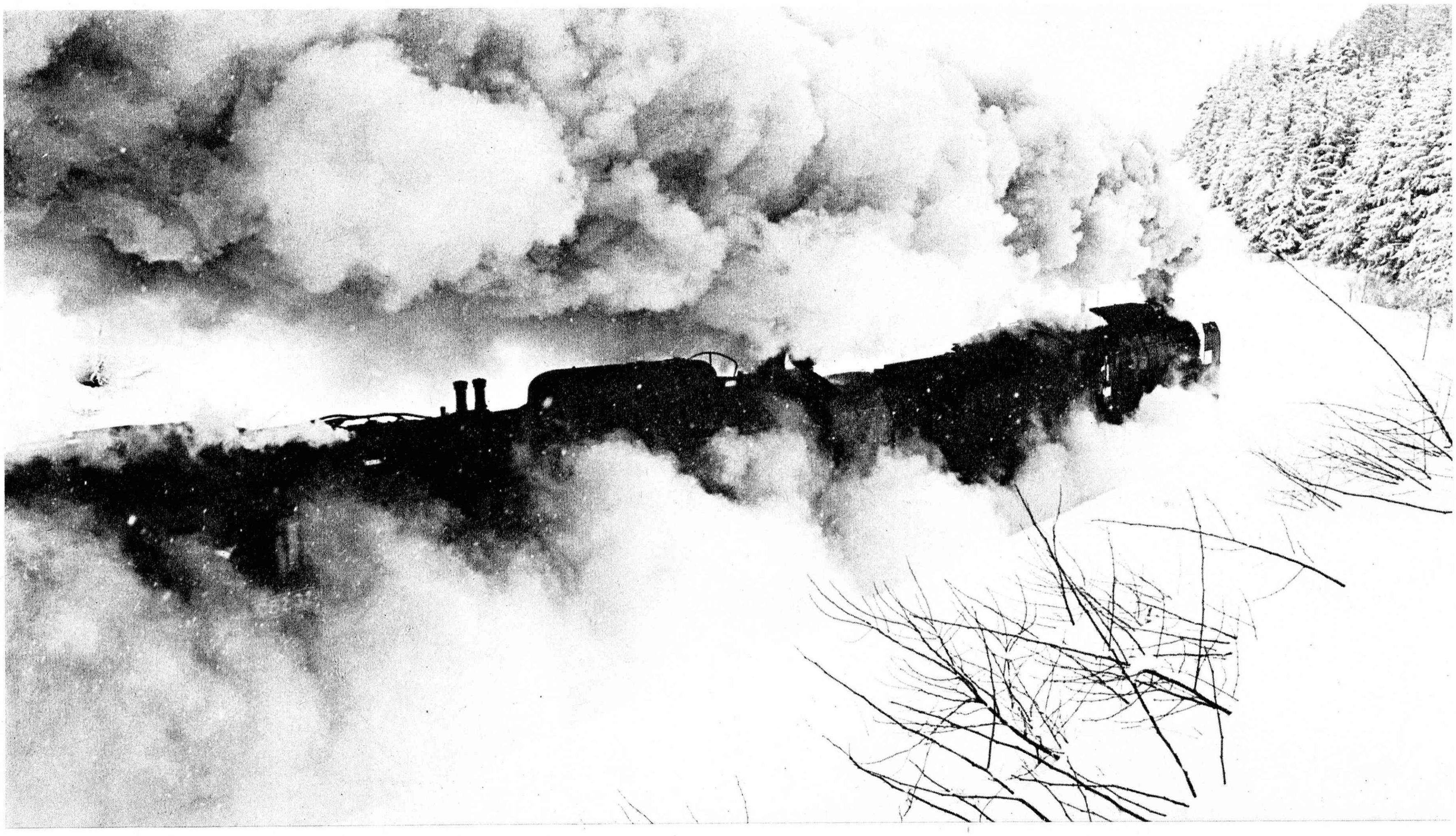

よい準備正しい作業にケガはない



Oil refinery nearing completion. It will go into operation in April this year.

THE LURE OF JAPAN'S RAILWAYS

Photos & Text by Naotaka Hirota



By Albert E. Kaff
United Press International

"My fateful encounter with trains dates back to my pre-school days, when my family and I lived not far away from a railroad yard. There, I was completely enchanted by those living machines born of white-hot steel."

With that introduction, professional photographer Naotaka Hirota, 34, presents a remarkable collection of photographs which portray one of the world's finest rail systems and some of Japan's spectacular scenery. . .

The young Japanese photographer, who has devoted his life to trains, records Japan's entire rail system from the 19th century German locomotive which still works in a remote area to the sleek, blue and cream Hikari (Light) express trains with a record speed of 250 kilometers (153 miles) per hour and a cruising speed of 210 kilometers (126 miles) per hour.

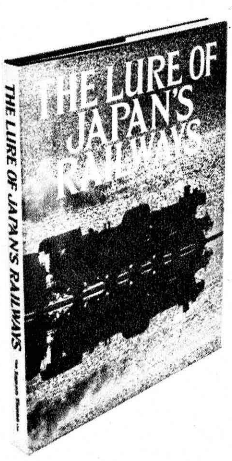
Hirota gives his readers a trip through the land of cherry blossoms, kimono, rice paddies and factories choking the air with smoke.

The reader, rather the viewer, rides with Hirota on trains that roll through Japan's snow country, past Buddhist images guarding rice fields, beneath a rainbow, along a sea coast dotted with fishing boats, past a torii, pagoda and a tennis court into the urban marshaling yards with their rectangular patterns of tracks and power lines. . .

Hirota's pictures of trains in the winter are particularly arresting, steel and steam etched against bleak, gray snowscapes.

Hirota concludes his photographic essay with a brief history of Japan's rail system and line diagrams of two locomotives, a steam engine and an electric car that pulls the swift Hikari express along the new Tokaido line.

It's a book designed for camera or train buffs, a handsome addition to any library.



168 pp.: 16 color illus., 128 black-and-white illus., 24 pp of text and tables. Cloth-over-boards binding with full color jacket and box. Size: 8¼ x 11 inches (21 x 28 cm).

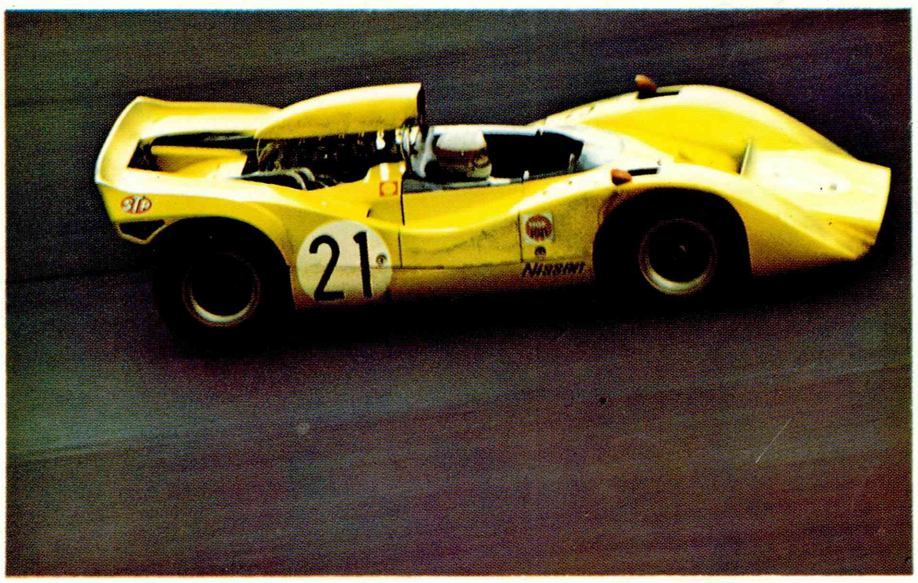
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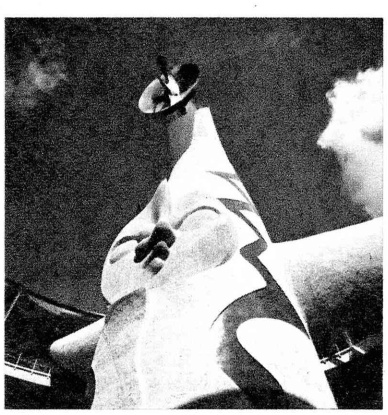
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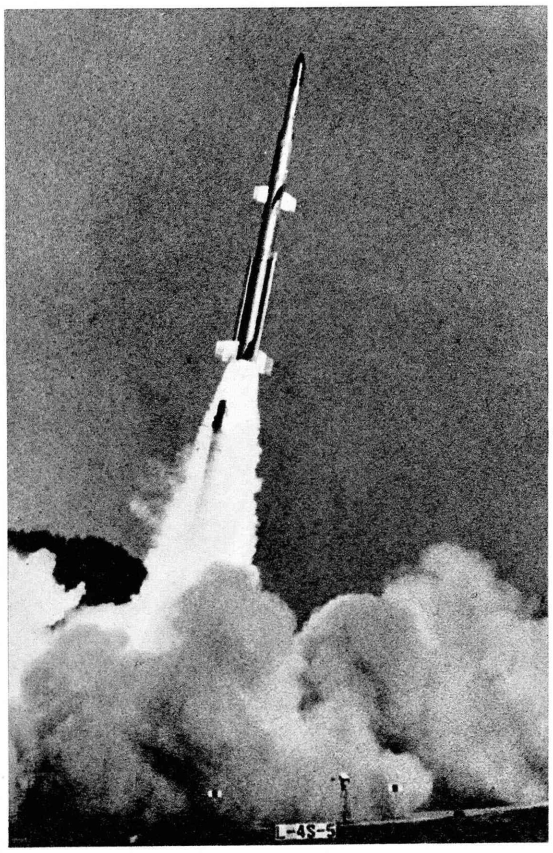
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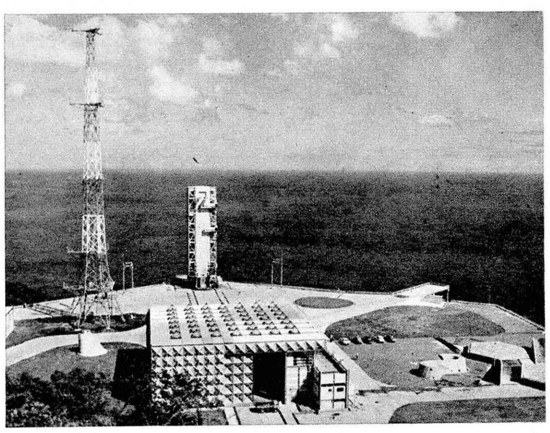
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Japanese Currents

SPACE DEVELOPMENT

Japan Becomes 4th Space Power





On February 11 this year, Japan's first man-made satellite went into orbit around the earth. This made Japan the fourth space power in the world to orbit an artificial satellite on its own, after the Soviet Union, the United States and France.

Tokyo University's Institute of Space and Aeronautical Science, which had long been conducting tests to orbit an artificial satellite, launched the four-stage Lambda 4S-5 rocket from its Uchinoura Space Center in Kagoshima Prefecture, Kyushu, at 1:25 p.m. February 11. The rocket flew smoothly as the first, second and third stages were detached successively. After six minutes and 47 seconds, the spherical fourth-stage rocket was ignited when it reached an altitude of 360 kilometers over a point 1,400 kilometers east of the launching site. After a combustion lasting 28 seconds, it was blasted off at 8.2 kilometers per second on a course lateral to the surface of the globe. As a result, the fourth-stage rocket went into an elliptical orbit around the earth and passed over the Uchinoura Space Center after its first orbit at 3:56.10 p.m., thus becoming Japan's first man-made satellite.

The Lambda 4S-5 rocket, used as the launch vehicle, measured 16.25 meters in overall length and 73.5 centimeters in maximum diameter, and weighed 9.4 tons. All of its four stages were powered by solid fuel. The globe-circling satellite consists of the burned-out fourth-stage spherical rocket (48 centimeters in diameter and 13.7 kilograms in weight) with a cone-shaped payload section (9.4 kilograms), containing instruments, attached atop it. The satellite thus measures about one meter in overall length and 23.1 kilograms in total weight.

The test group of Tokyo University's Institute of Space and Aeronautical Science received radio signals from the satellite up to 3:56.10 p.m. the same day, confirming its orbit around the earth. It named the satellite "Osumi" after the Osumi Peninsula where the Uchinoura Space Center is located. The Japanese satellite was registered as 1970-11A with the Committee on Space Research (COSPAR). On February 20, it was also officially listed by the United Nations.

Tokyo University's Institute of Space and Aeronautical Science intends to orbit a full-scale scientific satellite sometime in August or September this year with a Mu rocket developed for full-scale satellite launching. Meanwhile, the National Space Development Agency, set up last autumn, is pushing a project to send up an experimental stationary satellite in 1974. Therefore, the day is not far off when Japan, which has now joined the ranks of space powers, will become able to make a full contribution to space communications and observation. Photos show the launching of the Lambda 4S-5 rocket and Uchinoura Space Center.

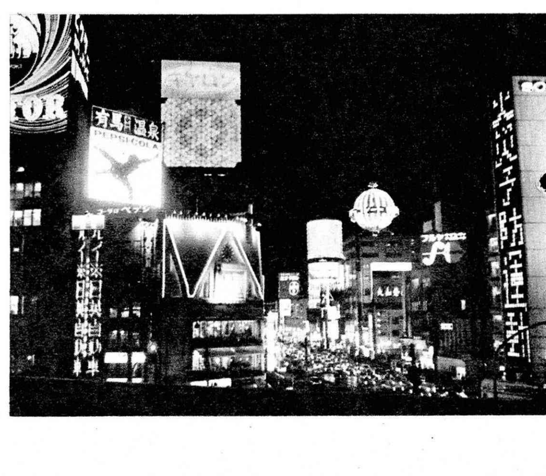
TOKYO

Ginza and Champs Elysees Become "Sister Avenues"

"Sister cities" are no longer uncommon. But "sister avenues" are still a rarity even in this fast narrowing world. Recently, Champs Elysees of Paris and Ginza Street of Tokyo have agreed to enter into "sisterhood" affiliation, and their agreement to become "sister avenues" is to be signed on the occasion of the inauguration of the Japan Air Lines' direct service between Tokyo and Paris via Moscow.

A proposal for close kinship between the two world-famed avenues was first made by a federation of stores along Champs Elysees to its counterpart, Ginza, two years ago through JAL's Paris Office.

The two "sister avenues" are now planning various commemorative events. Ginza Street will have a France Week during the 3rd Ginza Festival scheduled for October 9-18 this year and invite leaders of the Champs Elysees store federation to Tokyo and their wives for the occasion. Diverse events, including sales of French goods, are planned for the week to steep Ginza-goers in the fragrance of Paris. Champs Elysees for its part will hold Japan Week in May next year. There are also plans to promote interchanges in various fields, such as commerce, culture, sports and entertainment, in the future under the slogan of "connecting the two worlds, East and West,



with hearts." Moreover, advocates of close ties between the two avenues are highly hopeful of extending the sisterhood affiliation to Fifth Avenue of New York in order to form international partnerships among the three major avenues of world renown.

Japan's Tallest Building Opened



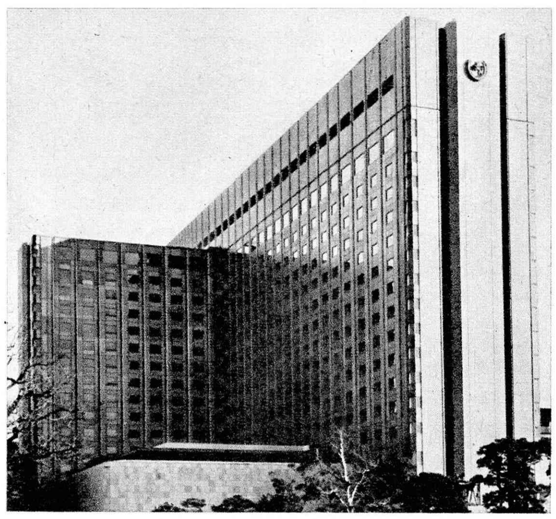
The World Trade Center Building, the nation's tallest, 40 stories above ground and situated in front of the Japanese National Railway's Hamamatsucho Station in Tokyo opened on March 3.

The new trade center building, second of its kind in the country following the one in Kobe, centralizes world trade activities with offices of Japanese and foreign governments, consulates, customs office, Japanese and foreign manufacturers and trading firms, international banks, international airlines, shipping lines, tourist offices, etc.

The 152-meter tall building, completed at a total construction cost of ¥22,000 million ($61 million) including price of the land, is five meters higher than the 36-story Kasumigaseki Building in the heart of Tokyo, and the highest building in Japan until the Keio Plaza Hotel, now under construction in Shinjuku ,Tokyo, is completed in March next year.

New Imperial Hotel Opened

The new Imperial Hotel in the heart of Tokyo, 17 storeys above ground, opened for business on March 10. Offering 1,400 rooms and parking for 700 automobiles, the hotel ranks as the largest in the Orient.



During the 80 years since its foundation, the Imperial Hotel has achieved a worldwide reputation for excellence. Popular with visitors from abroad, in recent years, however, a sharp increase in the standard of living in Japan has brought a substantial rise in the number of Japanese guests staying in Western-style hotels. Furthermore, international traffic to and from Japan has grown extremely heavy. As a result, hotels in Japan now find their accommodation inadequate to accord satisfactory service to the rapidly increasing numbers of visitors. In these circumstances Imperial Hotel demolished its traditional main building, designed by Frank Lloyd Wright, the most famous American architect of his time, and in its place built this new hotel complete with every modern facility.

The new main building with 17 floors above ground and three below has a total floor space of 120,000 square meters, with 900 rooms. If the East Building and a garage are included, the total floor space reaches 185,000 square meters with 1,400 rooms (2,400 beds), which makes the hotel the largest in the Orient adhering to the highest international standard.

Japanese Currents

EDUCATION

Talent Cultivation from Birth

"Education must start at birth if Japanese children are to be brought up to have abundant creative power, beautiful heart and robust vigor." Under this slogan, the Infant Development Society (chief director: President Masaru Ibuka of the Sony Corp.), inaugurated late last year, went into action in March. The present thinking about child's education is that the "best way to foster rich sentiments and talents among infants is to let them play freely." But the talent cultivation movement of the new society is a challenge to this idea. It will thus produce widespread repercussions in Japan's educational circles as one of attempts to develop a new education in the 1970's.

The society operates "experimental classrooms" in Ota-ku, Tokyo. At present, violin and piano lessons are given infants aged from zero to four (20 pupils per class). From May, classrooms for such subjects as English, mathematics, science, physical education and Japanese language will be started to make the experiments a comprehensive study.

In the experiments, the violin classroom forms the core, and it is in the charge of Shinichi Suzuki, a world-famed pioneer in violin lessons for small infants with 30 years of experience to his credit. Under his system, still unweaned babies are made to hear the performance of masterpieces of noted composers, such as Johann Sebastian Bach and Antonio Vivaldi, over and over again by means of a phonograph. Even five or six-month-old babies come to learn such music by heart under this method of repetition. This serves not only to foster skilled violinists, but also to develop creative ability and rich sentiments. Experiments by this talent cultivation system have already proved this. In the experimental classroom, therefore, no musical notes are used in the early stage of training. Importance is attached to inducing the infants to try and reproduce the memorized music, and the teacher gives advice to that end. At the same time, the method of repetition is also used at the infants' homes by their mothers, who receive guidance from the teacher.



Meanwhile, the society is recruiting 10,000 parents throughout the country to organize extra-classroom activities. Teaching materials will be distributed to the member parents, who will be asked to submit reports on the effect of the new talent cultivation method on their children. The society will analyze and adjust the reports by means of computer. The data, coupled with the results of experiments and studies in the classrooms in Tokyo, will be used to formulate a sort of curriculum for the development of infants' talents—that is, what kind of lessons should be given at what time an dhow. The society is also planning to set up a special kindergarten, primary school and junior high school for the children receiving "education starting at birth" in the future.

FASHION

"Cardin" Fashion Even for Bank Employes

In recent years, interest in company "uniforms" has been mounting rapidly in Japan. Nowadays, attractive uniforms have come to be used as a means of recruiting young workers against the background of acute labor shortage. Even banks, long known to be meticulous about manners and morals, are paying attention to uniforms these days. In hopes of improving their image through better dressed female clerks, they are racking their brains over how to make these uniforms attractive.

The Fuji Bank, boasting the highest amount of deposits among Japan's financial institutions, has recently come up with a new women's uniform of a special design, which is the work of Pierre Cardin, a noted Paris fashion designer. This marks the first time that a Japanese bank—or any other company, for that matter—has entrusted its uniform designing to a foremost Paris couturier. All of the 7,500 female employes of the bank's offices throughout the country will wear the new uniforms from April 1. The navy-blue uniform has a white line forming the shape of a key, a symbol chosen by Cardin for the bank. Another white line runs along the hemline. The contrast between navy-blue and white exudes a bright atmosphere of youth and cleanliness. The hemline of the semi-tight miniskirt is five centimeters above the knee.



Before deciding on the new uniform, the bank management carefully listened to the wishes of young female employes through questionnaires and round-table discussions. Finally, the bank decided to entrust designing to world-renowned Cardin. This, it is said, is the first design of a bank uniform for the French couturier. Photo: winter uniform (wool) at right and summer uniform ("linetron"—mixture of linen and polyester fiber) at left.

INDUSTRY

Boom In Paper Products

Japan is witnessing a virtual "paper" boom today as an increasing number of consumers are purchasing wedding dresses, tables, furniture and decorations made of paper. This is a phenomenon which has astounded even the skeptical whose conception of paper was limited to publications and stationery. But with the progress of technology in the production and treatment of paper in recent years, the defects attributable to paper, such as weak resistance to water and its inherent flimsiness, have been overcome and a variety of products made of strong, resilient paper have been placed on the market.

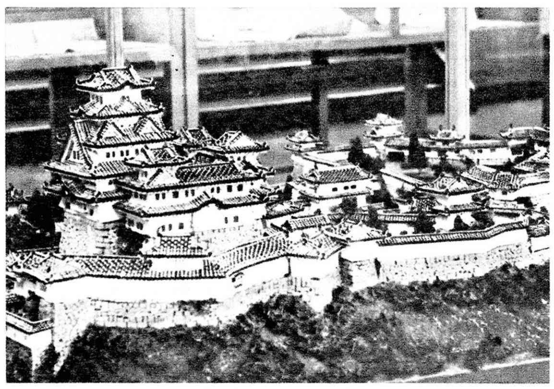
The Japanese consume a large quantity of paper in their daily life but never before have paper products been so popular as in recent years. The vogue today is for lighter products which can be used and then thrown away.

A department store in Tokyo recently opened a corner selling paper products and was elated over the brisk sales witnessed. Some 800 types of paper products ranging from *janome* umbrellas to chair and table sets made of corrugated cardboard and even neckties are being sold at the corner.

The material used for the paper products can be divided roughly into two categories—Japanese paper and foreign paper. Products made of Japanese paper—principally folkcrafts—are distinguished by their subdued sense of color and beauty. They include purses and lanterns. Products made of foreign paper are characterized by their fanciful designs such as chairs, tables and desks, lamp shades and bags.

The number of companies manufacturing paper products has increased conspicuously in the past couple of years, now totalling more than a hundred. The market for paper products has also seen a great expansion due to the fact that the manufacturers have been able to produce stronger types of water-resistant paper with the aid of synthetic resins and other chemicals.

There is a museum in Tokyo quite rare in the world which has a great collection of data and material concerning paper. Displayed there is a model of a paper manufacturing machine (one-half actual size) invented by the Frenchman Louis Robert in 1798. Another exhibit features in panoramic style, a doll making hand-laid paper, a process which even a child can easily understand. Photo shows paper-made "Himeji Castle," one of displays of the museum.



TOURISM

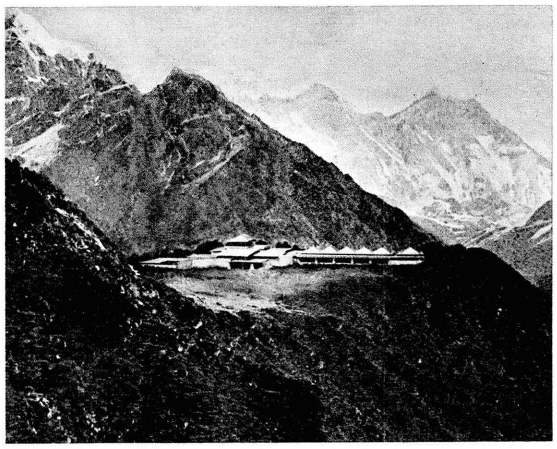
Hotel to Be Built in Himalayas

At present, the Nepalese Government is devoting much time and effort in trying to develop tourism in the Himalayas. One current project is to build a resort hotel halfway up the Himalayas with the cooperation of private Japanese quarters. The site is Namche Hill, 3,800 meters above sea level. Construction got under way in November last year, and the hotel, called Hotel Everest View, is to be opened on December 24 this year. It will be a unique establishment in that no other hotel in the world is located at such a height.

Hotel Everest View will be a stone structure with 12 guest rooms capable of accommodating 24 persons (the capacity is to be increased to 70 guests in five year's time). Though limited in scale, it will be a comfortable resort hotel comparable to urban hotels, complete with an electric power plant, boiler heating system and oxygen supplying equipment. The hotel rooms will command a magnificent view of Himalayan peaks, such as the world's highest Mt. Everest and Mt. Lhotse.

The hotel is being constructed by the Trans Himalayan Tour Private, Ltd. (based in Katmandu), which is a joint venture between the Himalaya Kanko Kaihatsu Co., Ltd., organized in Tokyo by mountain lovers and

Japanese Currents



young businessmen for the express purpose of building a hotel in the Himalayas, and Nepalese interests.

The company is also planning to use an airplane for carrying guests between Katmandu, the capital of Nepal, and the hotel, and to that end, an airfield will be constructed at Mamche Hill. Photo shows the Himalayan peaks and the Hotel Everest View (photomontage).

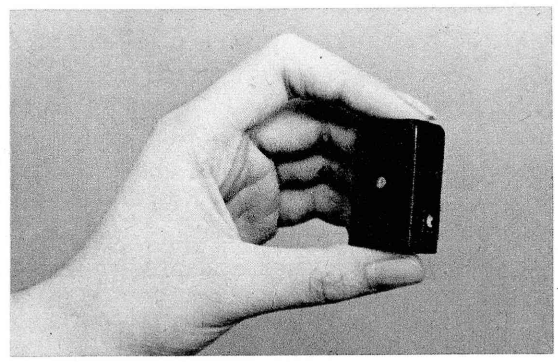
NEW PRODUCTS

Versatile Three Wheeled Motorcycle



The Honda Motor Co. has developed a small three-wheeled vehicle which it claims can be driven over marshy land or frozen roads where ordinary motorcycles cannot be used. The vehicle, called Honda US90, is equipped with low pressure tires resembling those of aircraft. Powered by an air-cooled four cycle 89cc. engine, it can easily be dismantled into six parts and carried aboard passenger cars, Honda says. The vehicle was developed primarily for export.

Battery Cassette FM Transmitter



Cony Electronics Corp. in Tokyo has developed a unique, small-sized transmitter. Named MM-8, it operates on a battery cassette. Using three silicon type transistors and one diode, it has a field strength of 23.5 dB/m at a distance of 300 meters and covers a range of 500 meters. Price: $40.

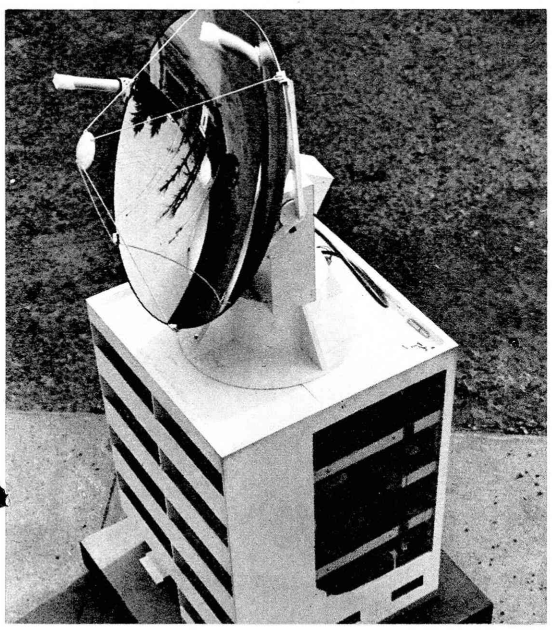
Orient's Longest Escalators

Four 45-meter escalators, the longest in the Orient, made their debut in Tokyo recently. Manufactured by Hitachi, Ltd., these escalators are installed at the newly opened Shin-Ochanomizu subway station, to link the ticket windows and platforms about 20 meters below.



Each of the new escalators, moving at 30 meters per minute, can carry a maximum of 9,000 passengers per hour. The upper ends of the escalators are sloped into the floor at a gentler angle than conventional ones so that passengers can stand comfortably in spite of the high rise. Besides various safety devices, the escalator has a Hitachi-developed sound arrester to ensure quiet operation.

Artificial Sunshine Device



The "artificial sunshine device" has made its debut in Japan to keep the sun shining even into a room facing north and make it bright and warm like one facing south.

Its developer, the Goto Optical Research Institute of Tokyo well known for manufacture of planetariums, has recently made a model reduced to one-20th of the actual size and conducted experiments. Under this method, a condenser is installed on the roof, and the concentrated sunbeams are led to rooms within a building via ducts, plane and convex mirrors.

The condenser has a device to follow the diurnal motion of the sun automatically. Therefore, a maximum amount of sunlight can be collected at all times from sunrise to sunset. Experiments showed that even the north-side rooms, usually in the shade, basked in the sun with temperature rising by more than five degrees C. This proved the feasibility of the new sunshine system.

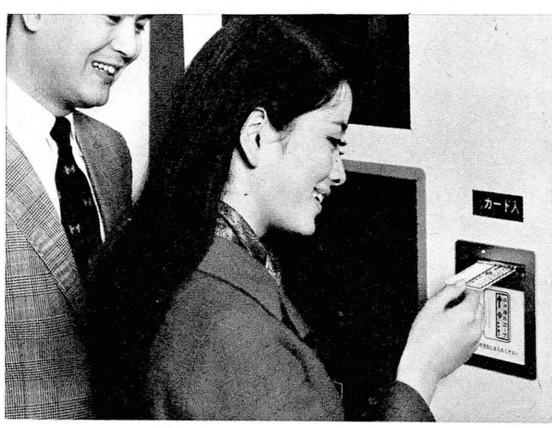
A proper combination of mirrors based on the same principle could bring the sunshine even into the garden in the shade or a room deprived of sunlight as a result of the construction of a high building on the southern side.

The research institute is to complete the first full-scale "artificial sunshine device" on a trial basis by the end of this year. This device, if practically applied, will prove a big boon to residents in crowded urban areas.

Automatic "Cash Dispenser"

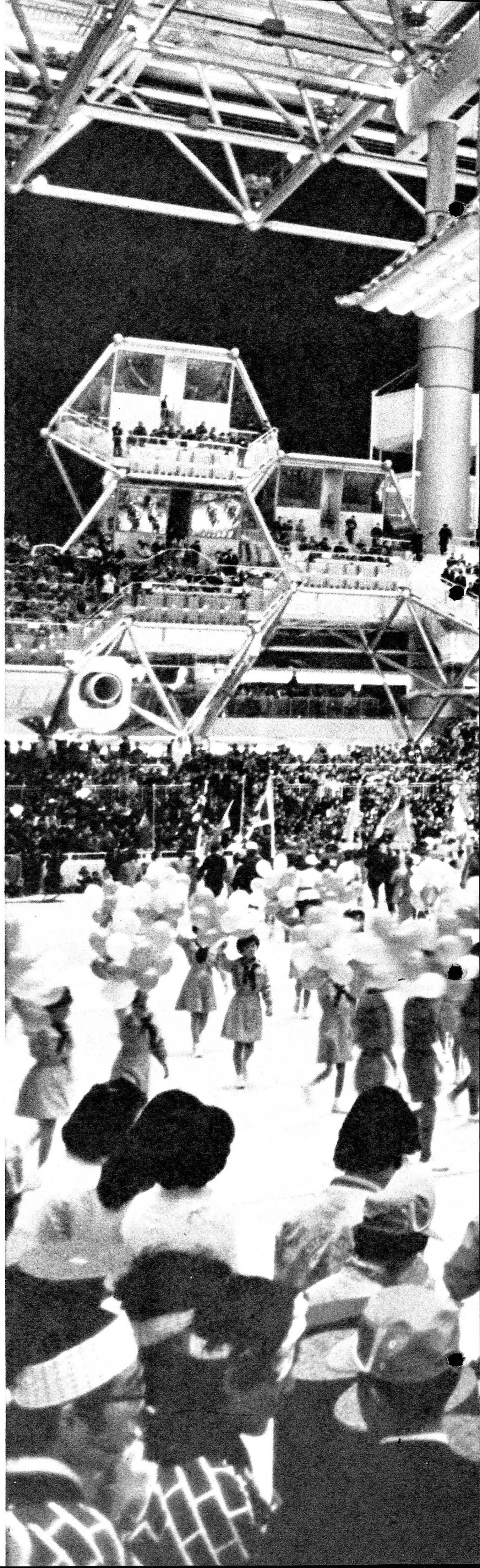
"Cash dispensers"— a machine which pays out cash automatically—have recently been put into practical use in Japan. The device has been developed jointly by the Sumitomo Bank, one of Japan's "Big Five" banks, and the Tateisi Electronics Co., a maker of electronic equipment. The "acsh dispensers" will be installed at many branches of the bank on a full scale after the completion of the current experimental period at the Shinjuku Branch in Tokyo and the Umeda Branch in Osaka.

The "cash dispenser" works this way: when a depositor having a current account at the bank inserts into the machine a bank-issued plastic card bearing a magnetically recorded number, which only he knows, and then dials this same secret number, cash is dispensed automatically. After the dialing, it takes only 15 seconds to get the cash. This saves considerable time over that needed for waiting at the teller's counter. Even if the card is lost or stolen, it cannot be used by persons other than the depositor since the number is invisible to the naked eye.



CURTAIN RISES ON EXPO '70

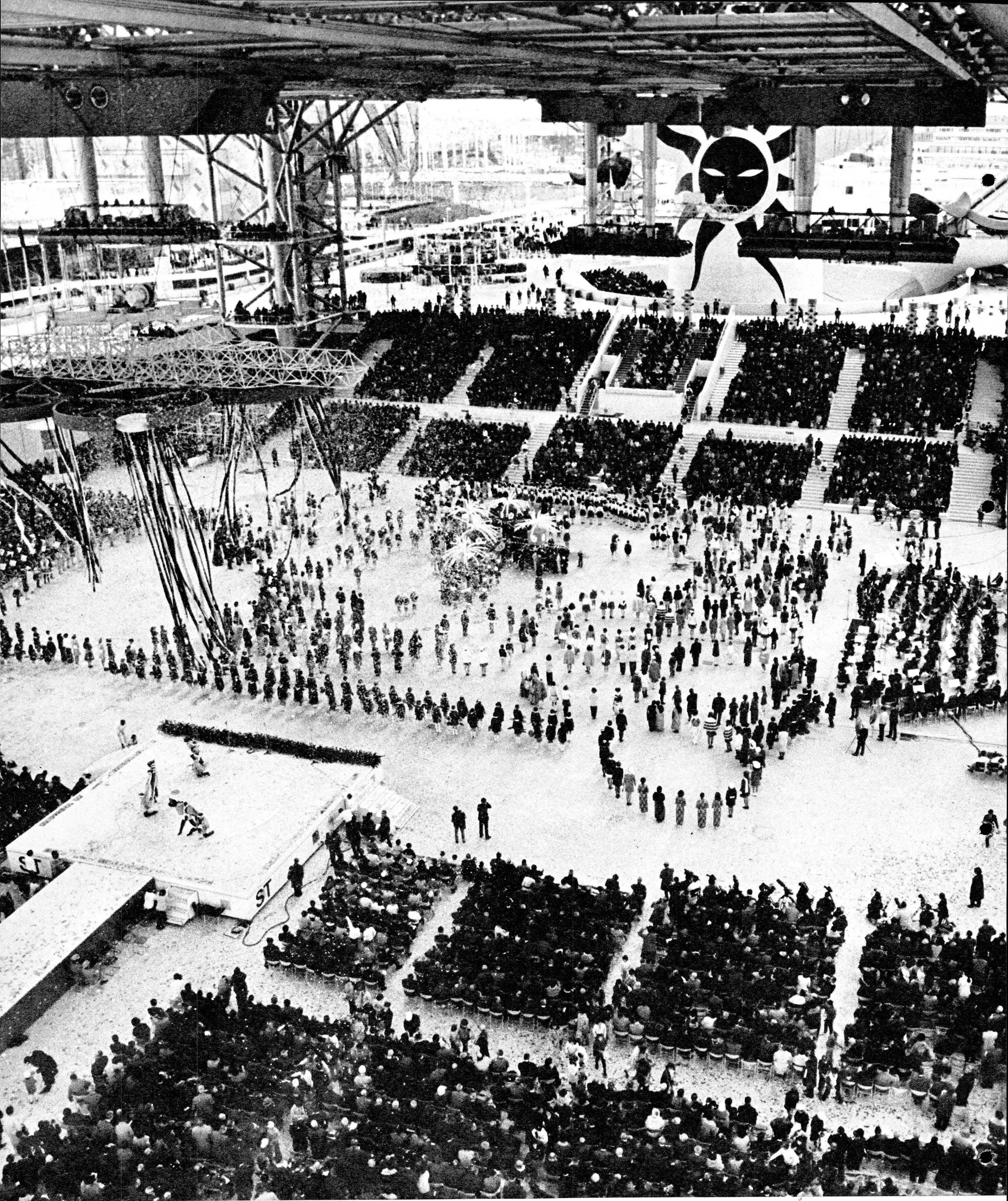
PROGRESS AND HARMONY FOR MANKIND



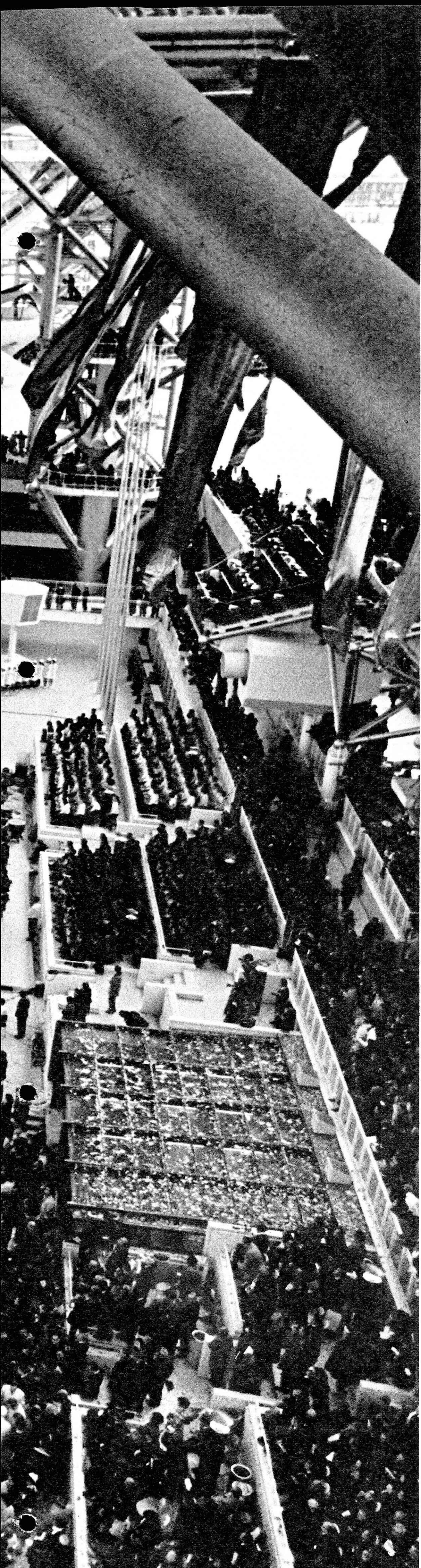
The Festival Plaza is the focal point of EXPO '70. It is the place for a variety of entertainment and festivities brought from every corner of Japan and the world as well.

Photographed by MASAMICHI SUMIYOSHI





The ceremony opening EXPO '70 was held on March 14. Festival Plaza in the Symbol Area which is marked by the eye-catching Tower of the Sun became the site of the festive activities.



THE GREATEST SHOW ON EARTH

CHERRY-blossom time will soon be here and as a prelude to spring the curtain was raised on the Japan World Exposition, Osaka, 1970 (EXPO '70) at the Senri Hills, Osaka, on March 15. This is the first world's fair in Asia and the largest in history. Under the theme of "Progress and Harmony for Mankind," the grand festival of the human race combining the East and the West is unfolding with pomp and splendor over a period of six months until September 13.

The fairgrounds cover an area of 3.3 million square meters, cut out of a hilly region and the fair site is slightly inclined downward toward its center. It is, so to speak, like a giant amphitheater of ancient times. The low area at the center, which corresponds to the stage, is Symbol Area—a huge stage 150 meters wide and 1,000 meters long. Here are the Theme Pavilion, Festival Plaza, Expo Hall, floating stage and Expo Museum of Fine Arts. The EXPO '70 theme "Progress and Harmony for Mankind" is focally symbolized and embodied here 115 pavilions, including those of 76 countries, one colonial government, six provinces and three cities, are arranged about the sloping fairgrounds around the Symbol Area like flowers. Near the center are relatively small pavilions while larger ones, such as those of the United States Pavilion and the Soviet Pavilion, are arranged on higher ground along the periphery of the fairgrounds. The spirit of "harmony" is clearly expressed in the layout.

If the fair site is likened to a giant tree, the Symbol Area is the trunk, while the pavilions are the flowers. The branches linking the trunk and the flowers are a network of "moving walkways" and the monorail along the rim of the fair site. The number of visitors to the fair is expected to reach a maximum of 600,000 a day—equal to the population of a medium-sized city. And highly functional transport and other facilities have been set up to handle such huge crowds with utmost efficiency. Moreover the whole layout of the fairgrounds represents a concept of the ideal center of a city of the future. Ultramodern facilities include a vast regional cooling system surpassing a similar one of Kennedy Airport in New York in scale. Moreover, computers are put to maximum use to ensure the smooth administration of the fair. The exposition is thus a focal embodiment of the cream of modern technological "progress."

At long last a Gargantuan festival reflecting man's ardent hope for and confidence in a true peace for the 21st century is unfolding here with the participation of 50 million persons, including 1.2 million from abroad.

THE fair site has five gates—the East, West, South and North Gates and Central Gate. The visitor would find it most convenient to enter by the Central Gate. So our guide to EXPO '70 also starts at this gate.



Climax of the opening rites.

When you stand at the Central Gate, your eyes are first be attracted by a tremendous flat roof 30 meters high, 108 meters wide, 292 meters long and 7.6 meters thick. Its steel frames alone weigh 6,000 tons, and only six pillars support the giant roof. Covered with polyester film all over, the roof shines beautifully with the sunlight by day and artificial illuminations by night, creating a dreamy, colorful world. Under the roof are the Theme Pavilion and Festival Plaza, the focal point of the fairgrounds. The holding of EXPO '70 in Japan, an Asian nation, holds a great significance. For it not only links the East and the

Continued on next page

ASIA'S FIRST WORLD EXPOSITION

West historically and culturally, but also stages a grand "festival" where people from all over the earth may gather and mutually confirm the pride and pleasure of belonging to mankind, transcending the difference in race, nationality, language, tradition and environment. The Theme Pavilion and Festival Plaza are so constituted as to serve as places to symbolize this significance and a stage to give concrete shape to it. This earnest wish of mankind is expressed by the Tower of the Sun with three faces, rising 70 meters high through the giant roof of Symbol Area. It is the veritable symbol of EXPO '70. Mr. Taro Okamoto, the producer of EXPO '70's theme display and the creator of the tower, says:

"The world exposition is not a mere show. I do hope all people gathering here will enjoy themselves with a firm belief it is they who will work up the festive mood of the fair. If at this vast site, the people of the world come into direct contact and open their minds to one another, we can't hope for anything better. Nothing at the exposition could compare with this in significance."

The Theme Pavilion has a display divided into three sections—that is, under, on and over the ground. The "past" section under the ground shows a process leading to the birth of man's life mainly with images and three-dimensional shapes, while the "present" section on the ground features about 500 photos taken by amateur cameramen throughout the world under the theme of "people supporting the world." The "future" section in the air displays among others a model of the communications satellite Intelsat IV and models of futuristic cities as designed by architects of the world. The Tower of the Sun pierces through the three sections with the golden face of the sun at its top symbolizing the bright future of mankind. The visitor is led from the past to the future by four escalators in the tower.

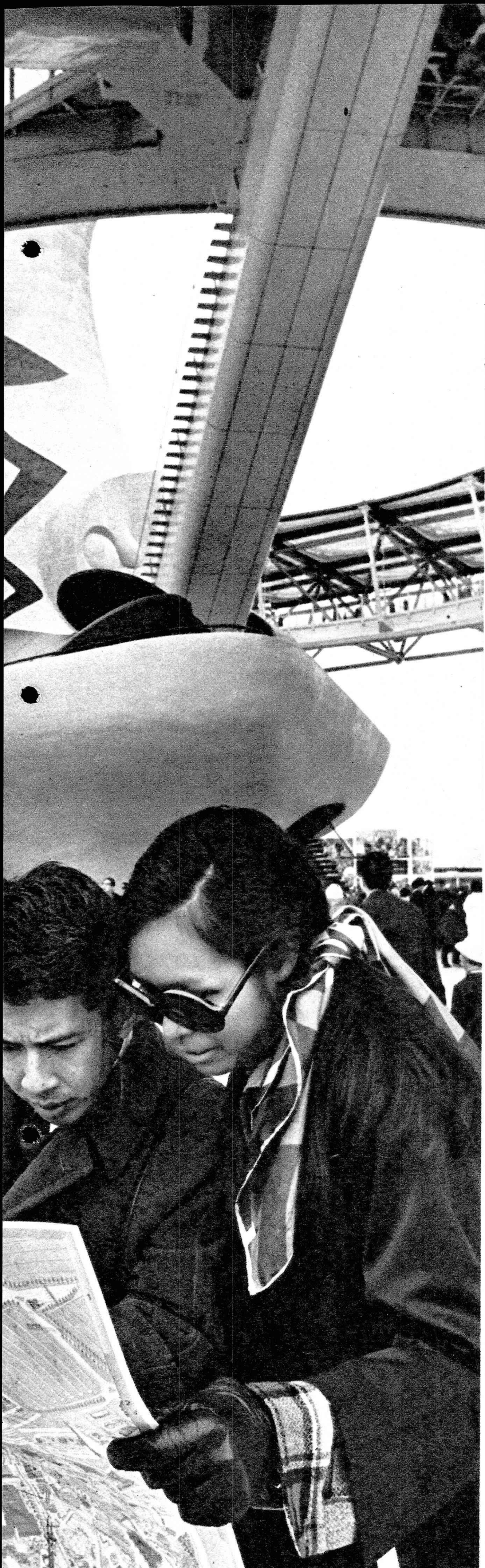
FESTIVAL Plaza is situated on the northern side of the Theme Pavilion with the Tower of the Sun rising at the boundary, fusing the heart of the Japanese festival and the spirit of the Western square. In the traditional Japanese festival, many people inspired by common desires and prayers sing and dance together, whereas in the Western square, citizens gather to talk and rest. The opening ceremonies for EXPO '70 were of course staged in this plaza. All important events, such as national days to be attended by distinguished guests from the participating nations, are being held here. Furthermore, it provides a main stage for people meeting for the first time at the fair to sing and dance and open their minds to each other. The plaza is, as it were, the center and heart of all events and functions of the world's fair. Covering about 10,000 square meters, it is capable of accommodating about 27,000 people with fixed plus movable seats, which can be turned into a stage, and standing room. The production and staging of all events in the plaza and even the replacement of stage settings can be remote-controlled by computer The opening ceremonies on March 14 were followed by a daily series of Japanese festivals centering on time-honored folk songs and dances in various parts of the country under the theme of "Here Comes Expo." The visitor can enjoy here various festivals from all over the world during the Flower Festival of the World in April, the Markets of the World in June, the Festivals of Youth in July, etc.

Near the northern end of the giant roof of the Symbol Area is an artificial pond, which has a floating stage. Standing on the northern side of the pond and facing Festival Plaza is the four-story ferroconcrete Expo Hall with a seating capacity of 1,500. Unique entertainment programs are in store for the stage and the hall. Moreover, the southern wall of the hall facing the pond is made of transparent glass, enabling the guests seated in the hall to see the entertainment at Festival Plaza. At times, moreover, the hall and the floating stage participate in the entertainments of Festival Plaza as supplemental stages. That is, the entertainment area centering on Festival Plaza makes possible not only grand, larges-scale stage production, but also variegated, complicated and fast-changing entertainment. It may well be called a futuristic theater where enjoyment and fun will expand like a boundless dream.

Shining white on the east side of the Expo Hall is the four-story Expo Museum of Fine Arts, featuring the most advanced technology and devices for art displays really becoming the new age of electronic brains. Therefore, although many of the pavilions and other structures and facilities will be dismantled after the end of the fair, the museum will be retained permanently in commemoration of EXPO '70. During the fair, more than 300 objects of art from 40 nations, such as Algeria, Nigeria and other African countries, Cambodia, Afghanistan and other Asian nations, Mexico and France, will be exhibited at the museum. Among various exhibits in the Symbol Area, the museum offers a unique atmosphere rich in artistic aura. It is thus a new mecca of art lovers.

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The six-month extravaganza will be the venue of international exchange under the theme of "Progress and Harmony of Mankind."





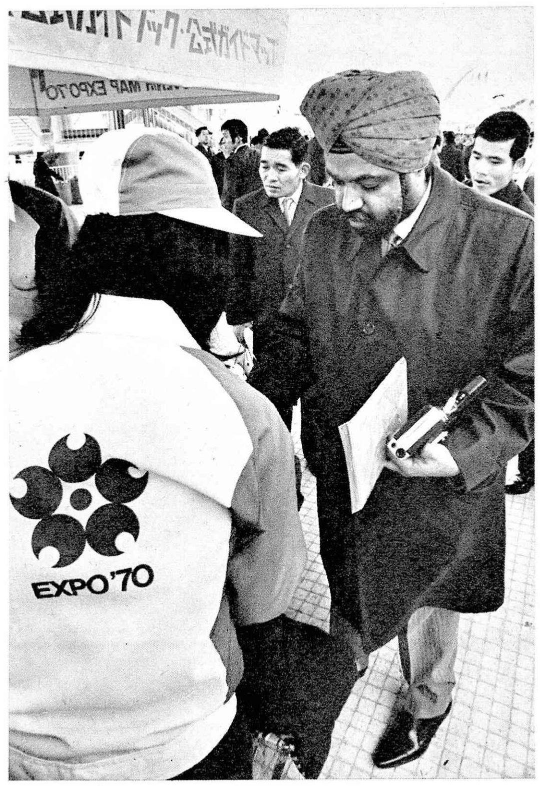






EXPO '70 opened its doors to the public on March 15 and within a few hours, crowds as international as the exposition itself filled the pavilions, plazas, parks, bazaars, amusement quarters and restaurants.





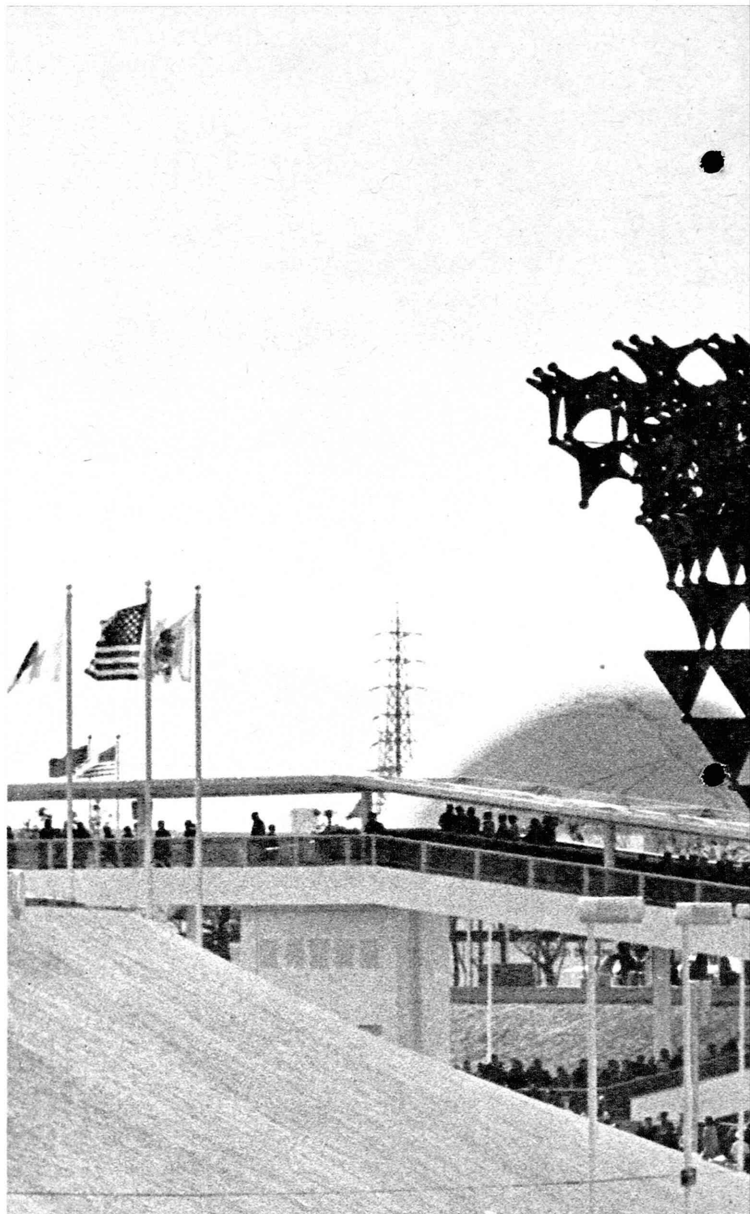




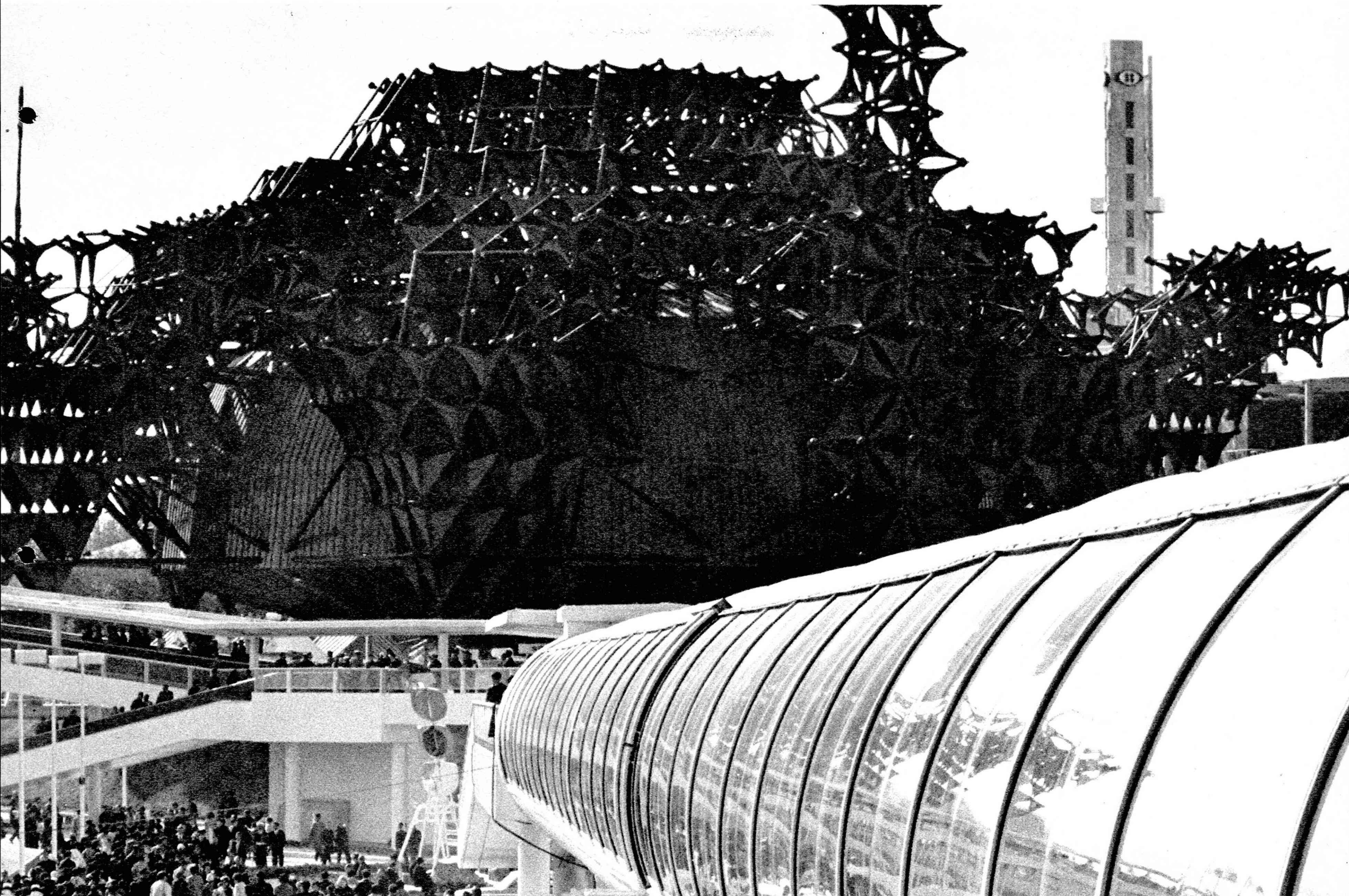


Visitors form several long lines in front of the U.S. Pavilion waiting for their turn to enter it and take a glimpse of the moon rock and space ships.





Through the main gate, visitors are led right onto the Symbol Area where the Tower of the Sun soars.



"Surprising," "futuristic" were among the words uttered by the first day visitors as their general impression of EXPO '70.





Continued from page 12

EXPO '70 has a unified theme and four sub-themes, which are the keys to evolving the main theme. The display and entertainment programs for the Symbol Area are designed to symbolize and give concrete shape to the main theme "Progress and Harmony for Mankind." The four sub-themes are "Toward Fuller Enjoyment of Life," "Toward More Bountiful Fruits from Nature," "Toward Fuller Engineering of Our Living Environment," and "Toward Better Understanding of Each Other." These themes proceed from a desire to "harmonize progress and disharmony, which may well be called a contradiction brought about by progress, and to promote progress and harmony together."

Therefore, the pavilions represent a collection on a single site and an embodiment of man's varied wisdoms born of his diverse traditions. There are 115 pavilions, both Japanese and foreign—the largest number ever constructed at a world exposition.

Though differing in size and shape, all pavilions show the best architectural techniques of the participating nations. And their display plans represent the most elaborate work of these countries. The pavilion of African nations vividly reflects their youthful energy, although they are taking part in Expo for the first time. By contrast, the U.S. and Soviet Pavilions demonstrate the tremendous strength of big powers, with the Apollo and Sputnik spacecraft, the crystallization of the most advanced technology, on display. The pavilions of Western European countries place emphasis upon national culture and art, while those of Asian nations treat the visitor to cultural legacies and traditional arts and entertainments, and also convey their courage to rise up from the midst of modern agony. In addition, the pavilions of Japanese enterprises mobilize their rich reservoirs of ideas and techniques. All pavilions are thus so attractive and impressive that the visitor could not overlook even one of them.

The pavilions are arranged in seven areas named after the days of the week —Sunday to Saturday—from east to west. Each area has a plaza with the name of the day for the convenience of the visitor. For instance, the Japanese Pavilion, patterned after a cherry blossom, and built by the Government, faces Sunday Plaza, while the pavilions of Canada, West Germany, France, the Republic of China, the Republic of Korea, Indonesia and New Zealand are situated around Tuesday Plaza. The U.S. Pavilion, holding "moon rocks," one of the biggest attractions, is on the southern side of Wednesday Plaza. All of these plazas can be reached by "moving walkways" emanating from the Symbol Area. But despite such convenient transportation, it is impossible to visit all of the 115 pavilions in a day or two.



Color page: Night view of Expo site. Seen from 120-meter tall Expo Tower.

FINALLY, let us take a look at various facilities other than the Symbol Area and the pavilions. In the northern part of the fair site is the Japanese Garden, a verdant resting place in stark contrast with the pavilion areas. Designed to demonstrate the world-famed Japanese gardening techniques, it has about 110,000 trees of some 100 varieties covering an expanse of 260,000 square meters. The guest house for accommodating distinguished guests from abroad is situated at the western edge of this tranquil garden. In the southeast section of the fairgrounds across from the Japanese Garden is Expoland, a recreation center for children, which also offers a lot of fun for adults. It features the Daidarasaurus, a giant jet coaster. There are also all conceivable kinds of play facilities, which can be enjoyed free or with charges ranging up to ¥100.

But whatever beautiful, great or instructive things the visitor may see or hear at the fair, he cannot resist hunger while walking around the vast grounds. Therefore, the Interna-



tional Bazaar has been set up so that the visitor may enjoy dishes from many countries. Also available here are unique folk-arts and special products throughout the world, enabling the visitor to make a global tour in one place.

Other facilities include those of the Japan Association for the World Exposition, which administers the fair, and the information center, which, though not in direct contact with the visitor, ensures the smooth management of EXPO '70. This center, along with the beautiful Expo guides like spring butterflies who can be seen everywhere at the fair, will provide the visitor with the best possible guidance and protection during the tour of the Exposition.

And now, let us ascend the Expo Tower which commands a panoramic view of all the facilities we have explained. Standing 120 meters high on a hill south of the Symbol Area, the tower has an observation platform at a height of 75 meters. Here, the visitor can enjoy a bird's-eye-view of not only the fairgrounds but also the sprawling city of Osaka in the distance. So let's enjoy Expo and meet again in Festival Plaza under the Tower of the Sun !

Night view of EXPO '70 skyline. The once barren Senri Hills has turned into an international wonderland bristling with nearly one hundred pavilions of different countries done in variegated forms and colors.

EXPO HOSTESSES:

AS INTERNATIONAL AS EXPOSITION ITSELF









Above: Bulgaria
Opposite page: Britain
Below right: Korea
Below left: Uganda









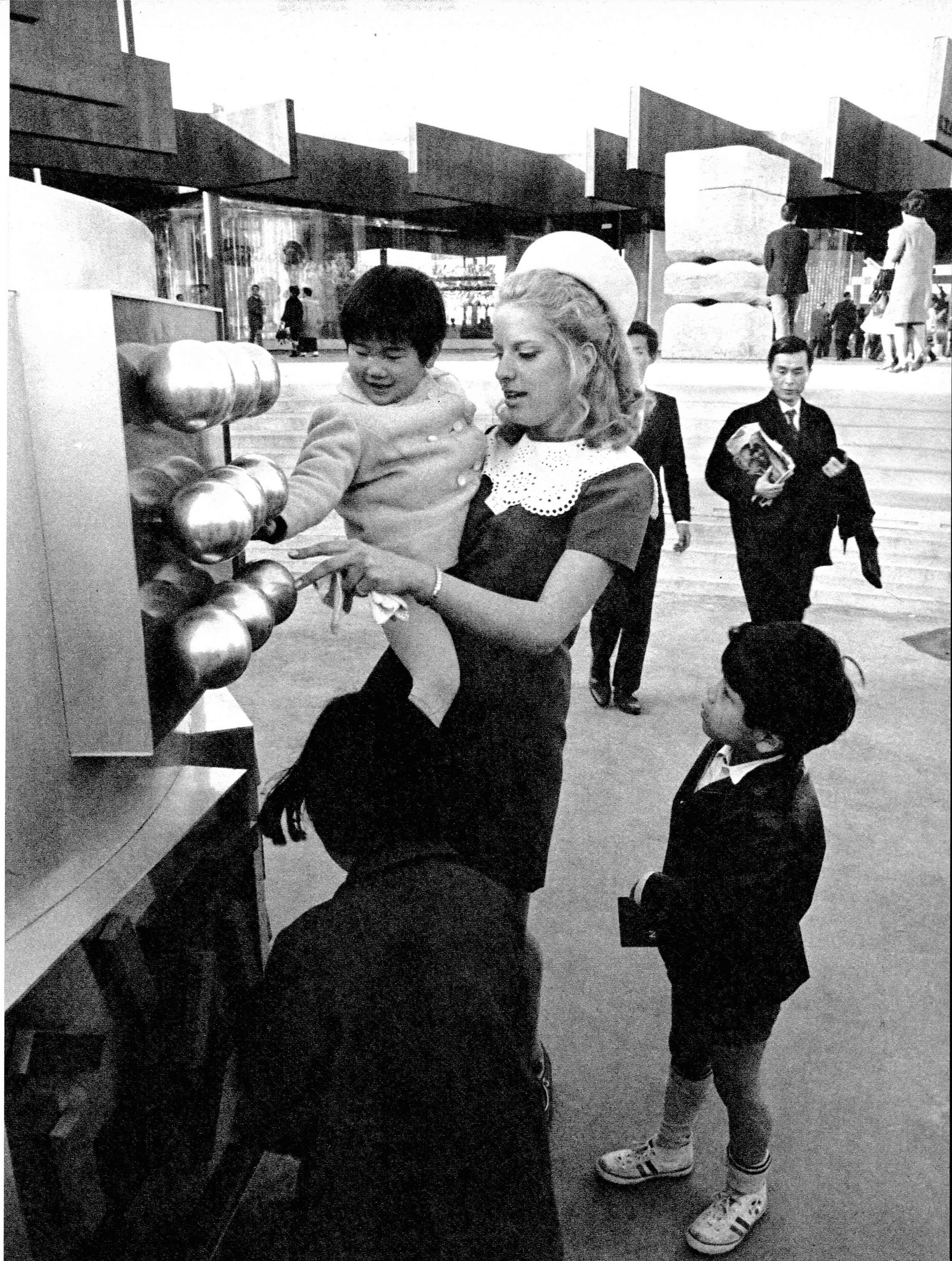
Above left: Japan
Above right: Hawaii
Right: Philippines







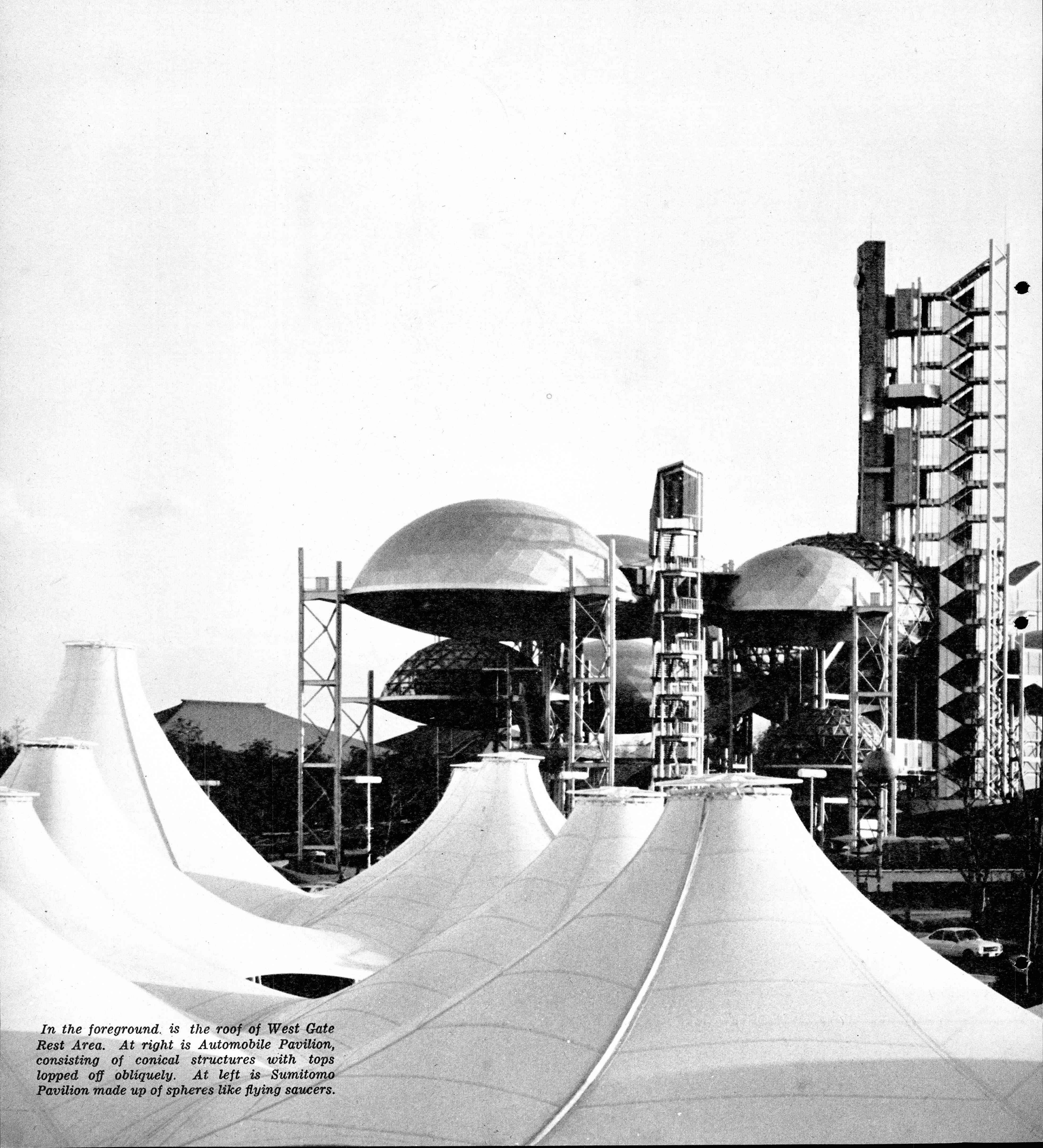




Expo hostesses are as international as the exposition itself. Most of them are either in miniskirts or unique national costumes.

Above: Czechoslovakia
Left: West Germany

EXPO STRUCTURES: EXPERIMENTS IN CITIES OF THE FUTURE

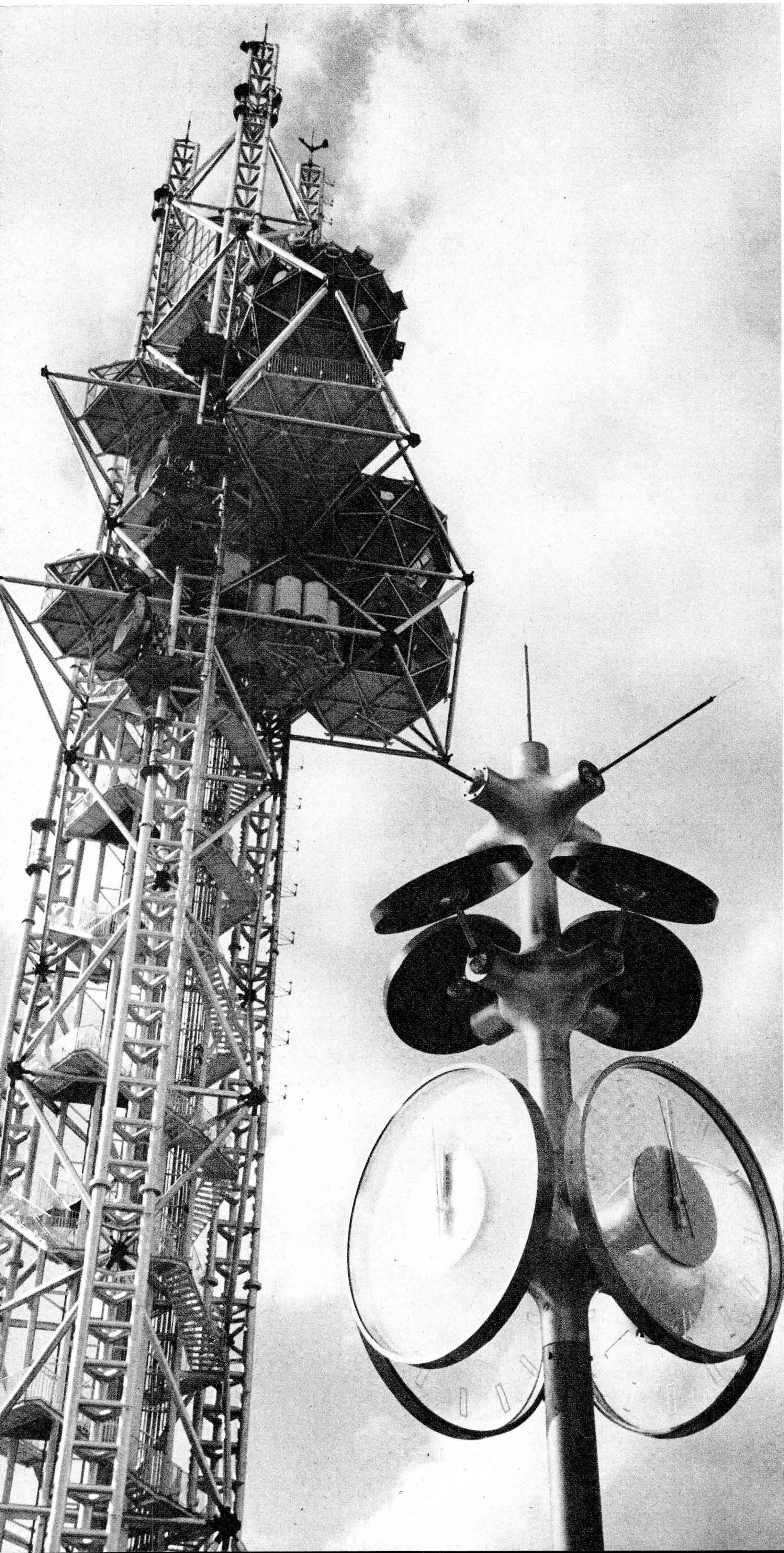


In the foreground, is the roof of West Gate Rest Area. At right is Automobile Pavilion, consisting of conical structures with tops lopped off obliquely. At left is Sumitomo Pavilion made up of spheres like flying saucers.

The pavilions at the Expo site are vying in showing off their national characters and beauty. Take the shape, for instance. There is a pavilion with the roof and building hanging from a high pillar. There is also a pneumatic-structure building like an inflated synthetic fiber balloon. Another pavilion boasts the "lift-up" method with a steel frame raised by jacks. Some are rising high into the sky, while others plunge deep into the ground. All the participating nations have devoted great energies to developing new techniques to make these pavilions. At the past world expositions, many pavilions mainly utilized the natural colors of building materials. There was even a fair whcih clamped limitations on colors. But at the EXPO '70, there is complete freedom of construction and illumination. There are colors galore—red, blue, yellow, purple, etc., some being somber and others close to primary colors. Moreover, architectural forming is also completely free, while building materials vary widely—iron, concrete, plastics, glass, etc. Though thus differing widely in form and color, each and every pavilion embodies an ambitious experiment for creation of a new urban space.

Photographed by NOBUAKI FUKUI





EXPO TOWER (Left)

A prime landmark of EXPO '70, the Expo Tower stands 120 meters high on a hill at the southern edge of Symbol Area. A multi-layer observation platform about 70 meters high permits a panoramic view of the fairgrounds. The tower built by new construction method is made of three perpendicular pillars with no wide base. It contrast starkly with the Grand Roof, also built by the same method but with a horizontal expanse.

CANADA (Right and next page)

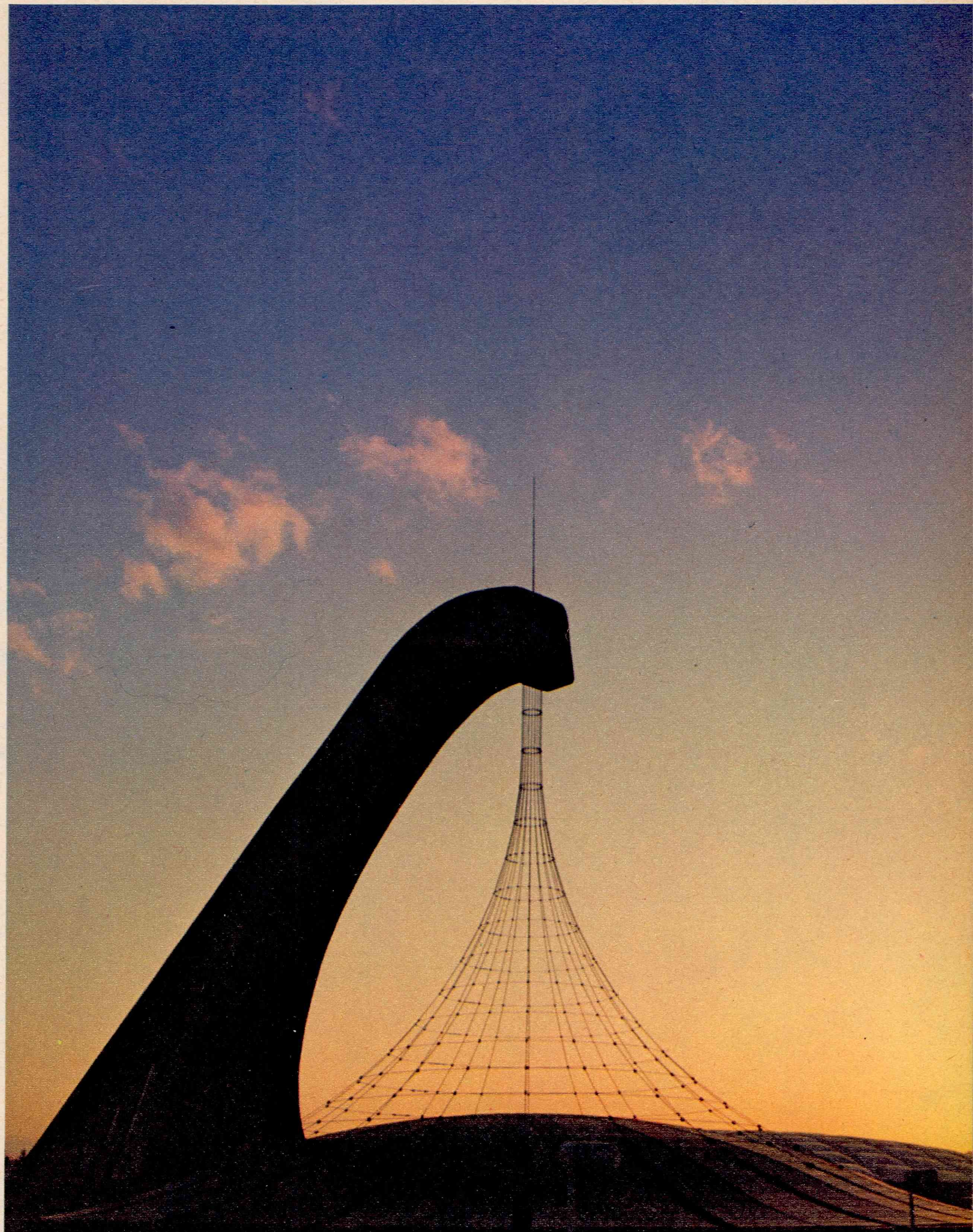
A glittering palace of mirrors, this pavilion consists of a wooden framework covered with 40,000 mirros, each 50 centimeters square. Besides, huge revolving multi-colored parasols stand inside to make the most of light reflection. If you stand between two mirror walls, your reflection in one mirror is reflected in the opposite mirror as well and then back in the original mirror.

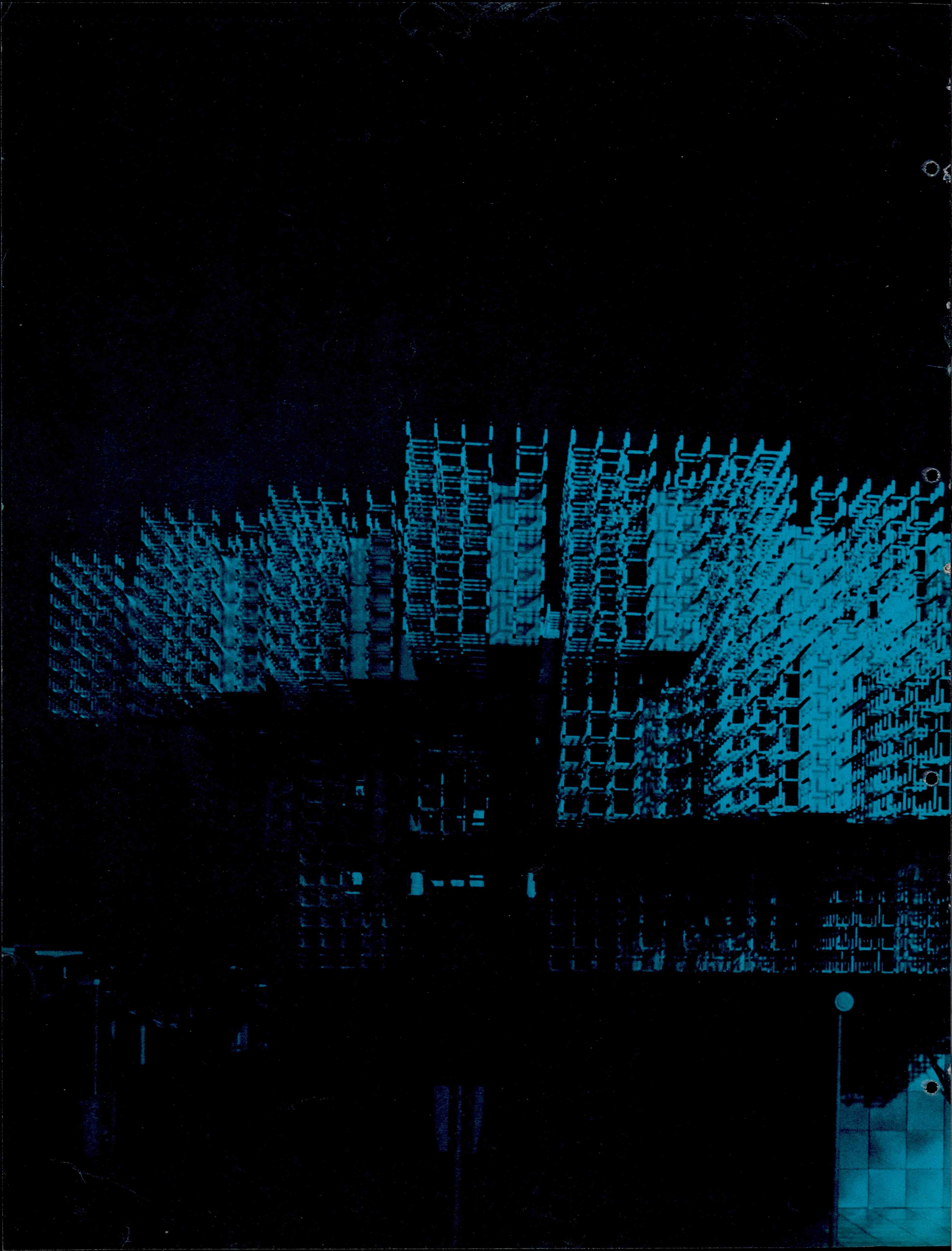
AUSTRALIA (Page 31)

A robustly extending concrete arm suspends the circular roof of the pavilion. This design, it is said, has taken a hint from the shape of a huge wave in a famous *ukiyoe* (woodblock print) of Katsushika Hokusai. The arm is 39 meters high, while the suspended roof measures 48 meters in diameter and weighs 26 tons.



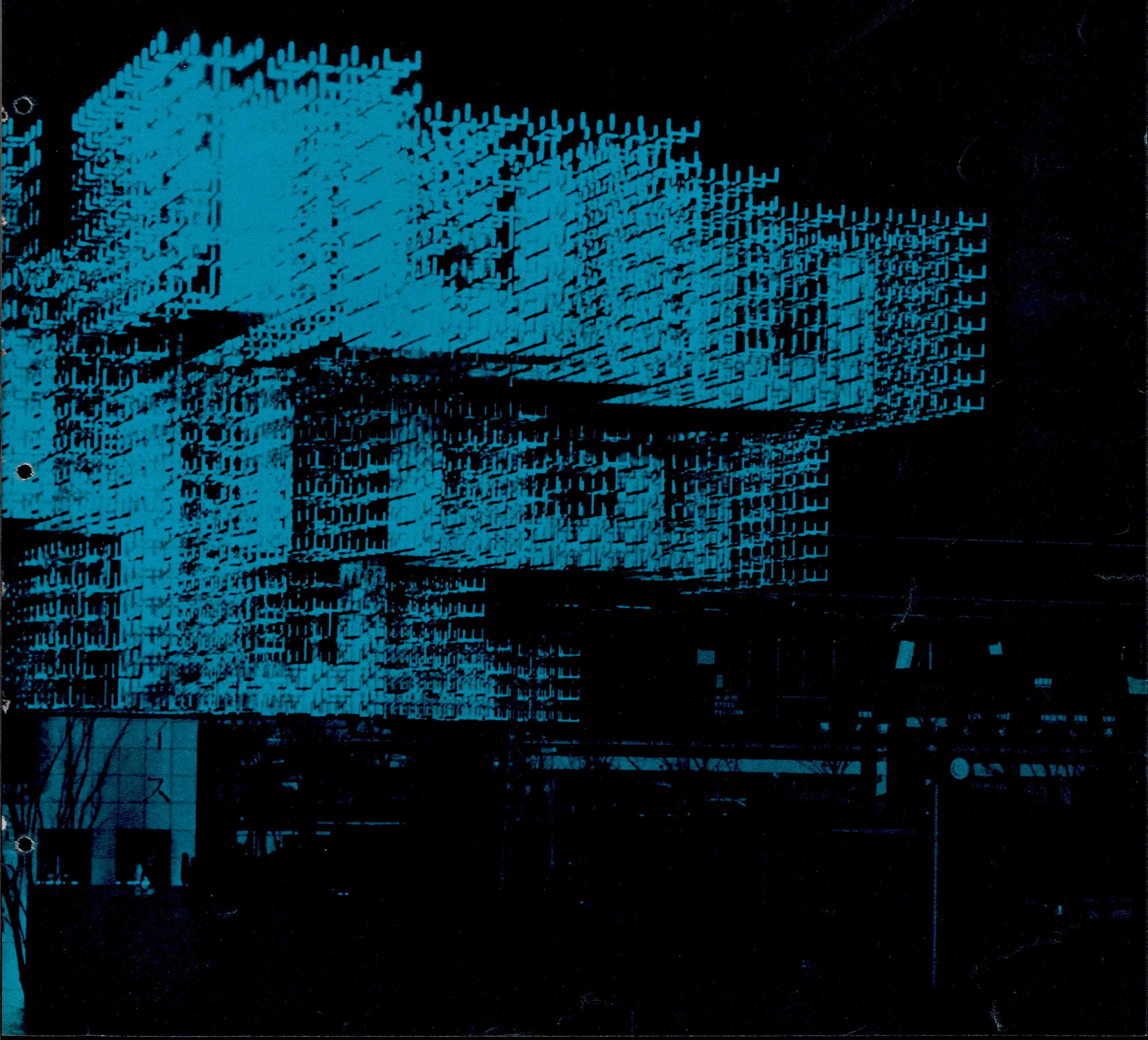


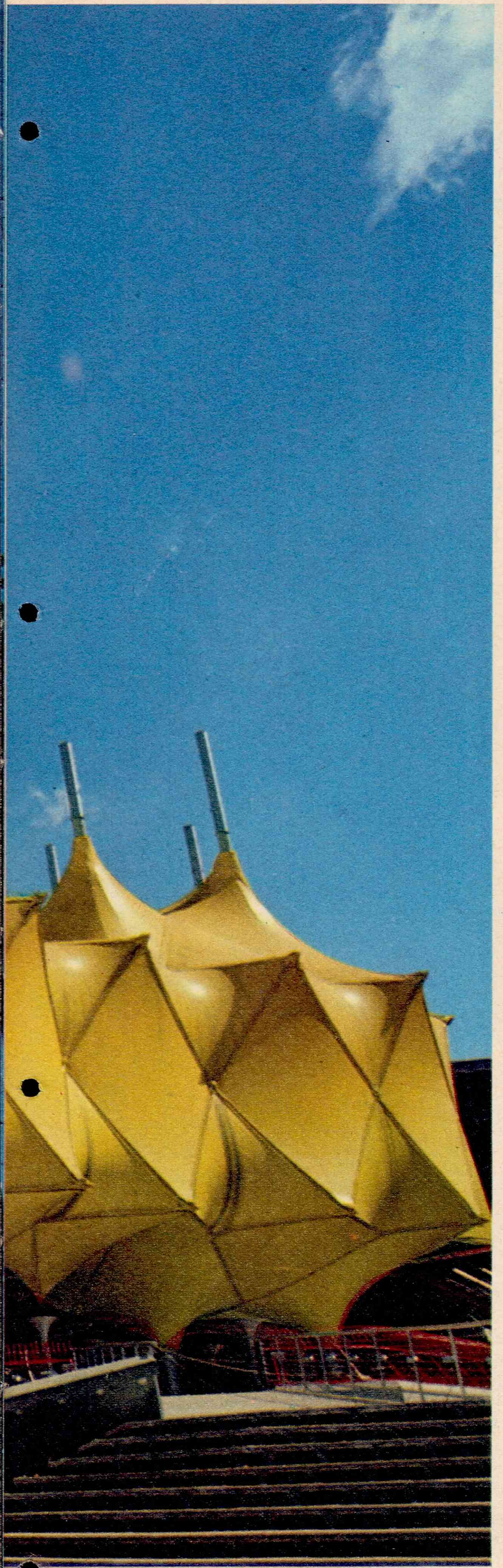


SWITZERLAND

The highly stylized "tree of light" of the Swiss Pavilion is clad entirely in aluminum and adorned with an intricate network of filigree branches, each carrying specially made lamps. It is 21 meters in height and 55 meters in width. In the daytime sunlight is reflected from the shiny aluminum and the glass of the bulbs. In the evening an electric power of one million watts illuminates 35,000 lamps and produces a fantastically festive and peaceful mood over the area.













PILLAR OF GRAND ROOF (Left)

This is one of the six pillars supporting the 6,000-ton Grand Roof 30 meters above the ground. A beautiful geometric pattern is delineated by the "space-framework" structure—that is, numerous short bars linked together vertically, horizontally and obliquely to form a stable shape.

TAKARA BEAUTILION (Right)

The Takara Beautilion features a unique construction of steel pipes and stainless steel capsules. The structure, designed by a young architect, Kisho Kurokawa, could well serve as an example of our homes of the future. Each of the 24 units which makes up the four-story building was prefabricated and then bolted together after being brought to the Expo site. It took only a week to "assemble" the structure and will require only two days to tear it down.

TELECOMMUNICATION (Page 34)

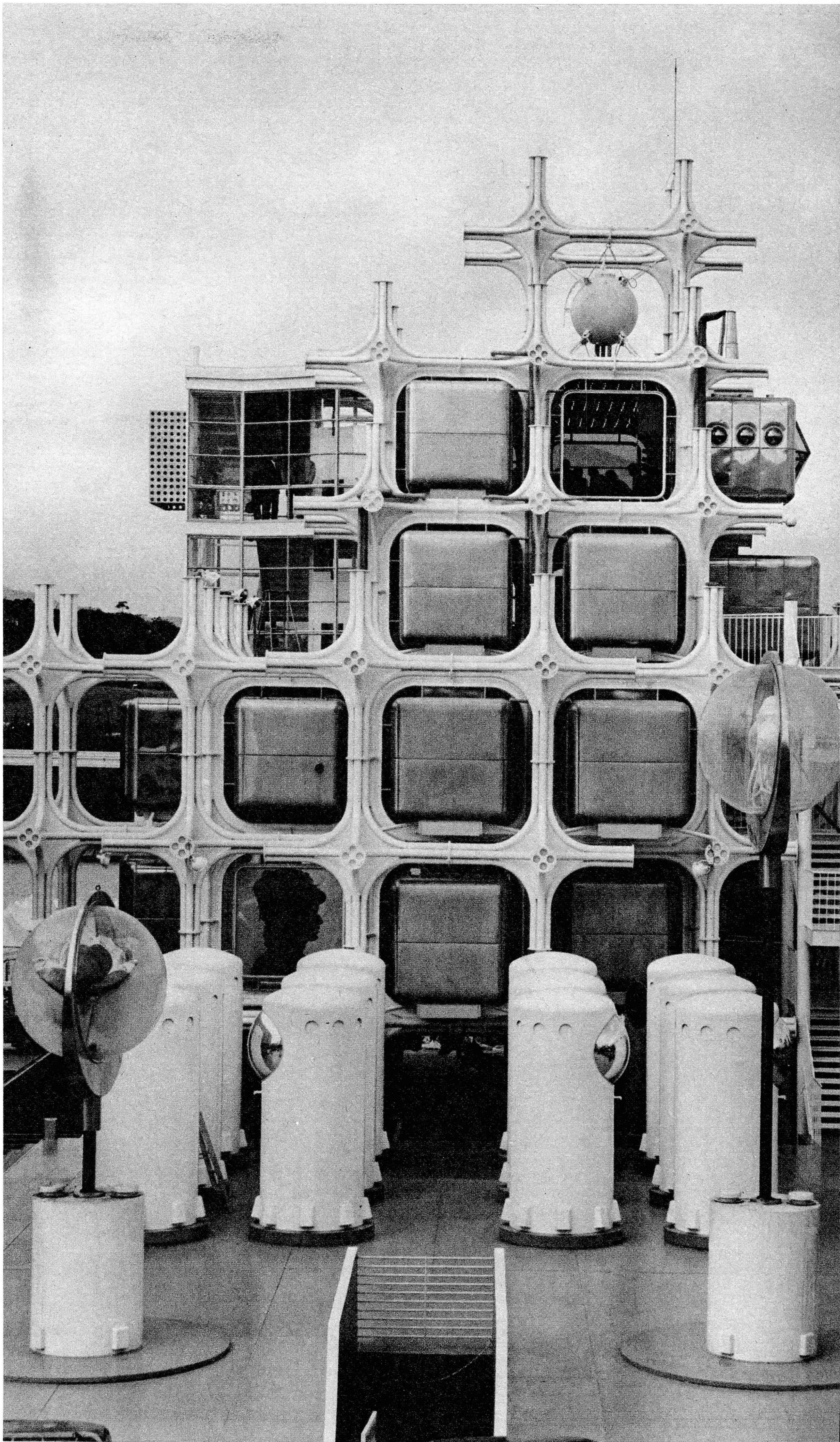
The inside of the yellow sections looking like a monstrous larva serves as both passageway and exhibition space. Standing 29 meters high, it consists of steel frames covered with vinyl sheets.

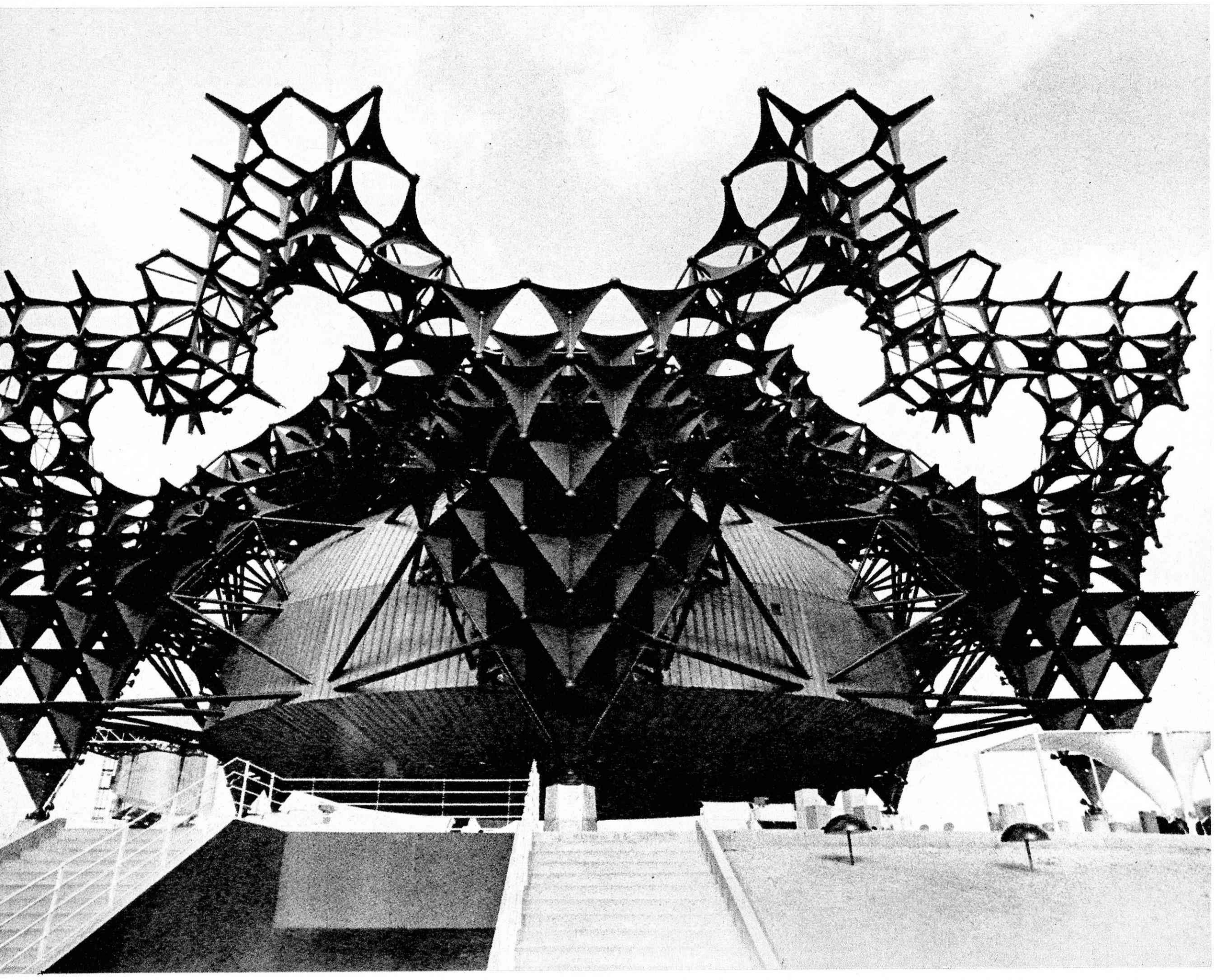
FUJI GROUP PAVILION (Page 35)

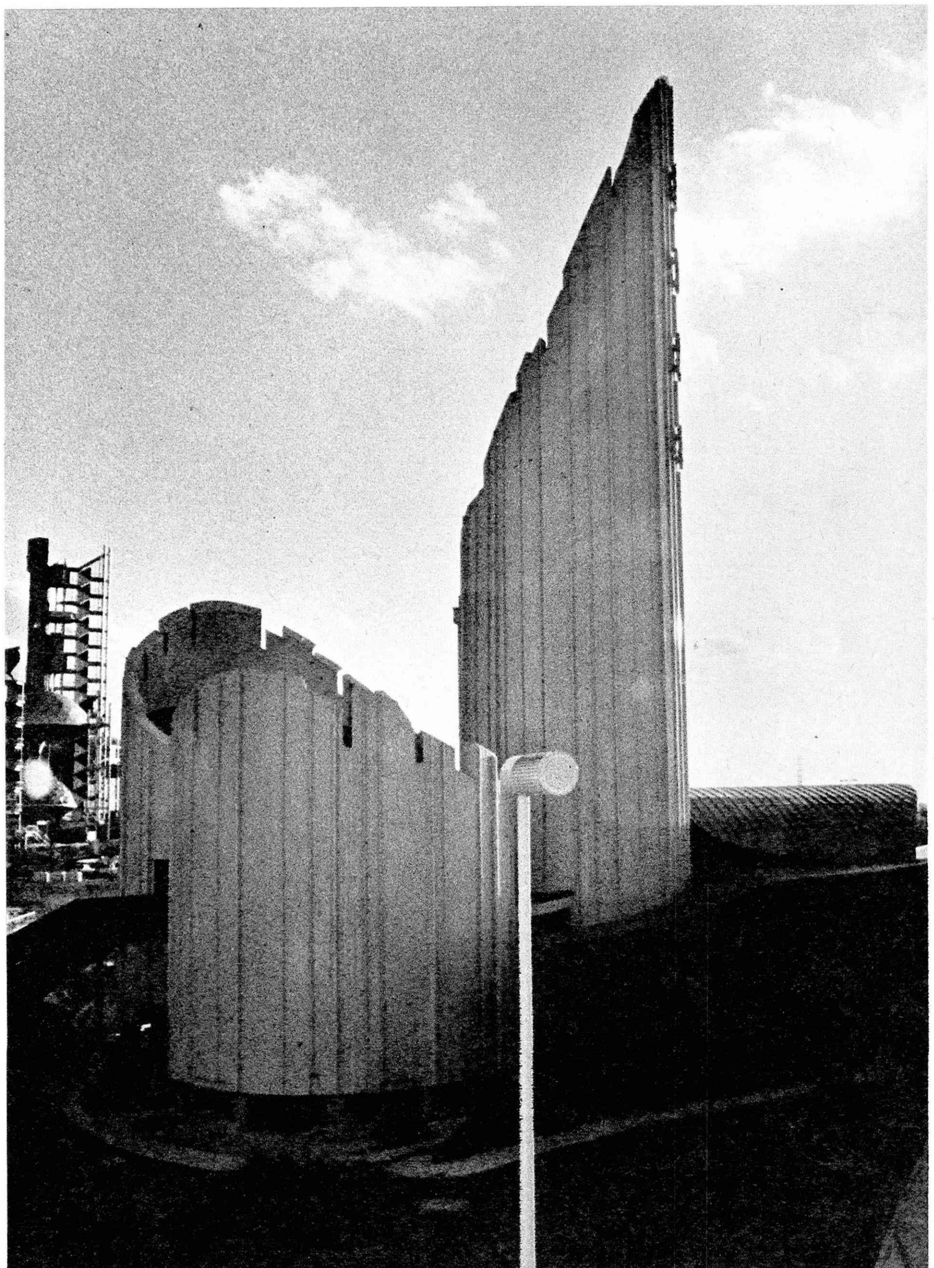
This is a unique pneumatic structure, using no steel frame or wood. The biggest ever pneumatic structure in the world, it comprises 16 inflated large tubes (4 meters across and 80 meters long) made of synthetic fiber, which are bended into a semicircular form and connected together.

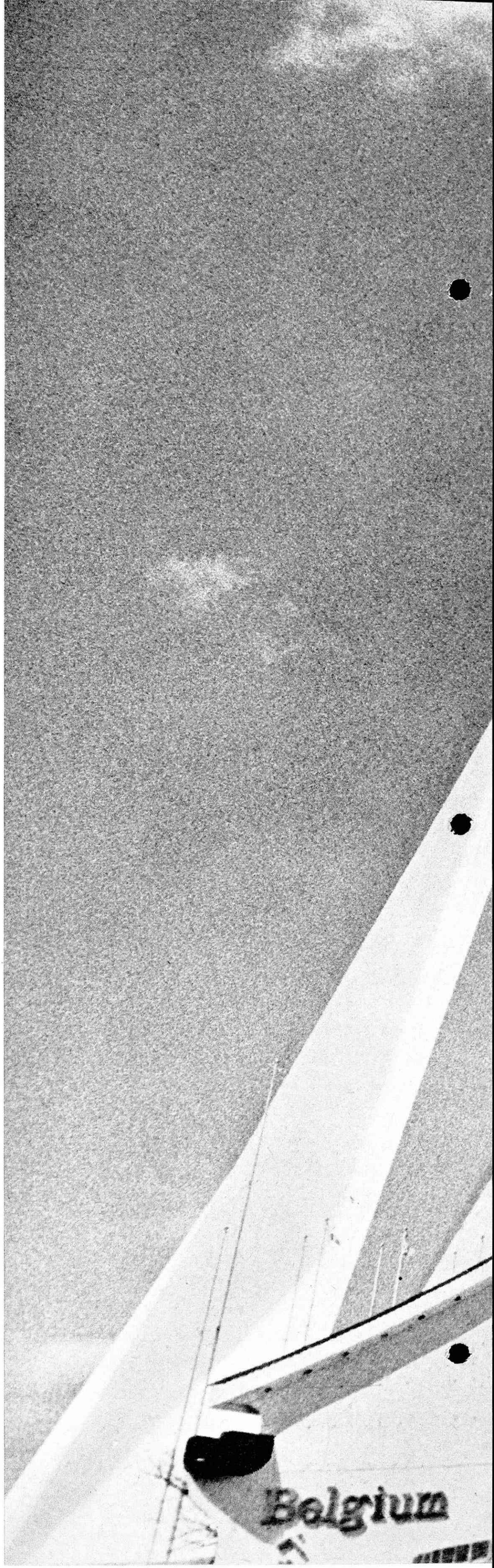
USSR (Page 35)

The pavilion is a colossal steel structure which stands 110 meters above ground at its highest point and covers a floor space of 8,430 square meters. The gradually sloped, semicircular edifice has its front side painted in crimson red and other parts in white so that it looks like an unfurled national flag of the country.








Belgium



TOSHIBA-IHI (Left above)

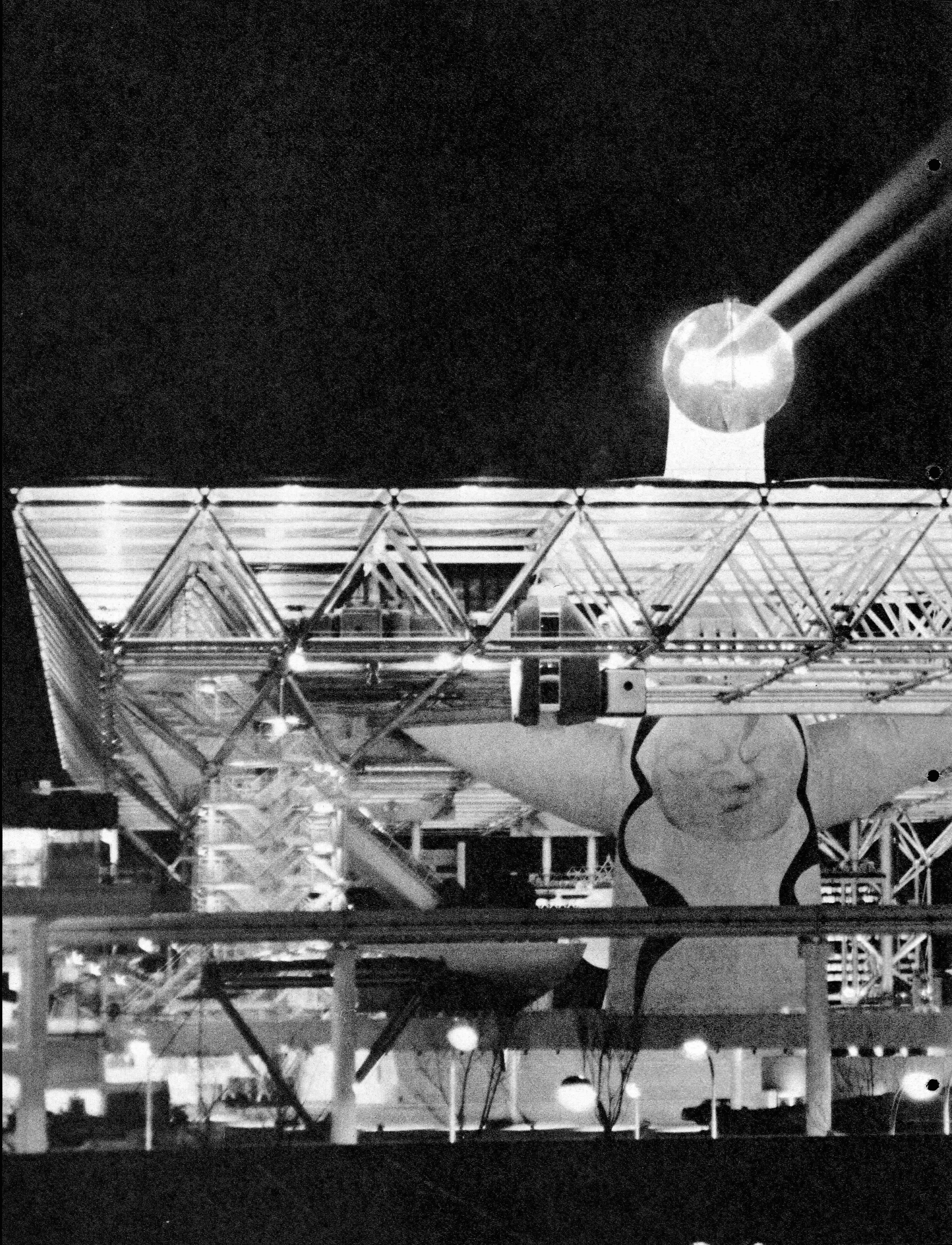
A mid-air spherical theater is supported by a unique "space-framework" structure made by welding together a total of about 1,500 iron parts called "Tetra Units." The complicated structure has been completed with maximum accuracy through a combination of computer and ultramodern "unit construction" method.

IVORY COAST (Left below)

Ivory Coast, derives its name from colonial days when hunters sought ivory from wild elephant herds. In keeping with its history, the Ivory Coast Pavilion is three cylindrical towers in the shape of elephant tusks eight to 35 meters tall.

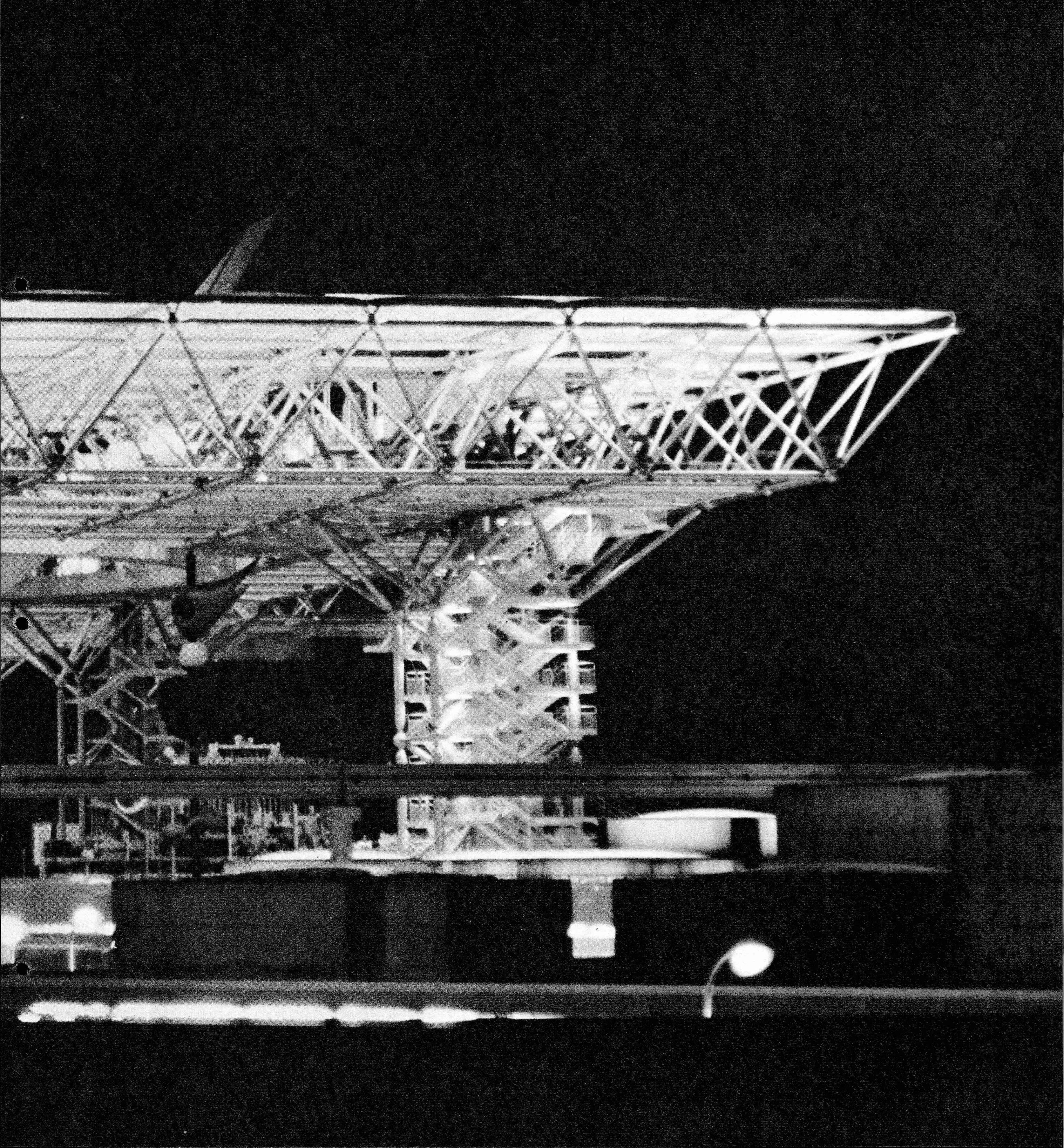
BELGIUM (Above)

This pavilion fuses the best architectural tradition of Belgium and the beauty of Japanese architecture. The simple beauty of the structure is made all the more impressive by the undulating pure-white walls and the brown roof. At left is the Soviet Pavilion.



GRAND ROOF

The core of Symbol Area is the Grand Roof 108 meters wide, 292 meters long and 30 meters above the ground. Weighing 6,000 tons, it is supported by only six pillars and covered with translucent polyester film. At night, the whole roof shines with illumination. Piercing the roof is the 70 meter high Tower of the Sun, which looks like an image of man challenging the mechanical civilization.



The Cherry Blossom:



Symbol of Japan



Cherry blossoms
in the spring sky,
They're like a mist
of floating clouds,
So bright and shining;
Come, O come; Come, O come;
Let us go to see
the cherry flowers.

——*An old Japanese folk song.*

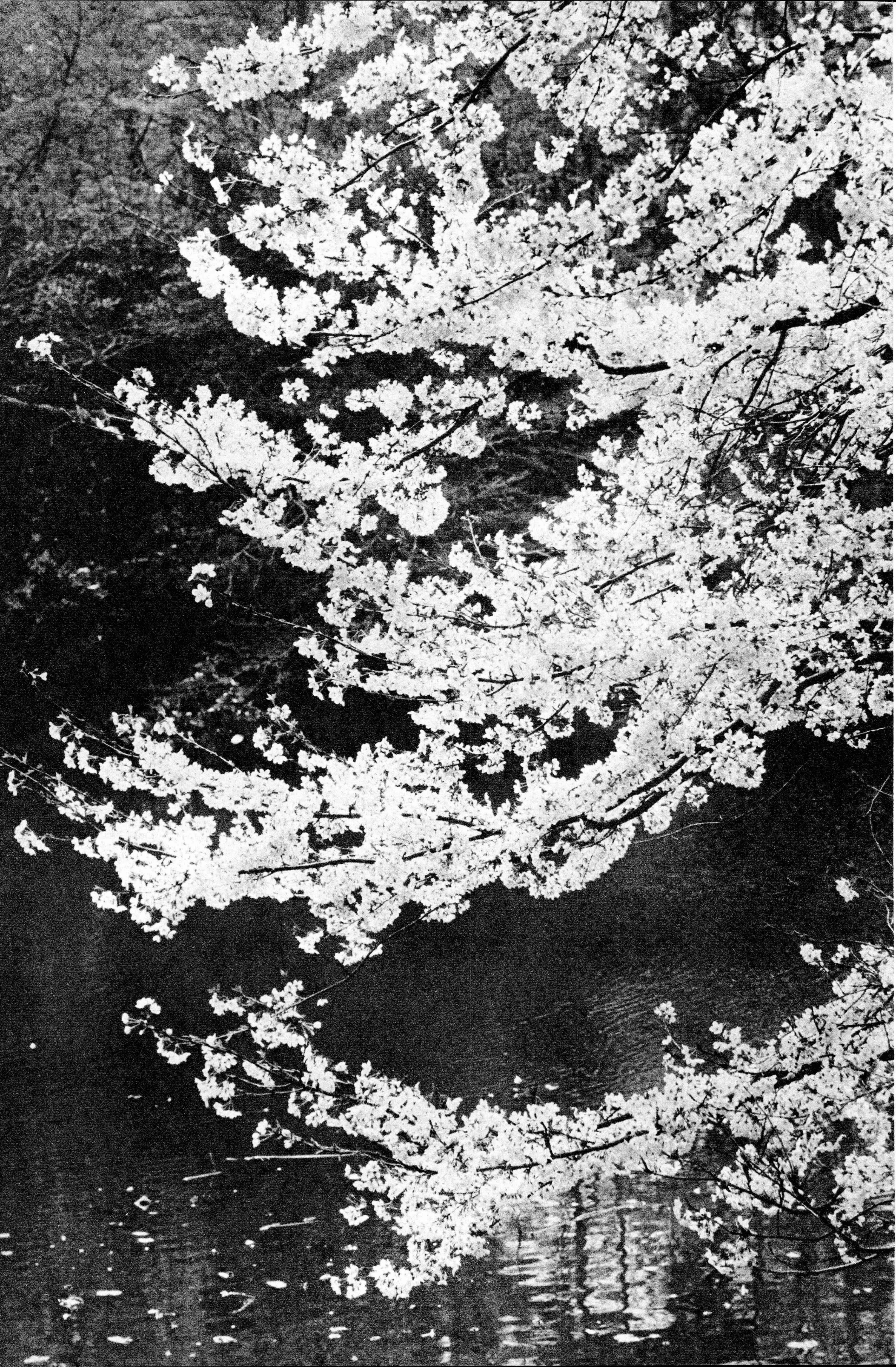
IN any mention of Japan, invariably the beautiful cherry blossom are called to mind. Throughout their history, the Japanese people have shown a deep attachment to the cherry tree, with its magnificent but so fragile blossom. In literature and the arts, in the theater and pageantry, the beauty of the cherry blossom has been displayed to make it the symbol of the country and is rightly designated in the hearts of the people as the national flower.

The short-lived flowering of the cherry blossom usually occurs with the arrival of spring in March. The first blossoms appear in the sunny, southern island of Kyushu in the middle of the month. Later, as spring marches steadily northward, the tight buds blossom in all their glory on the main island of Honshu, moving toward the north from the Chugoku area into Kansai, Kanto and the Tohoku district. Hokkaido, the northernmost island, must wait patiently until May to enjoy the splendor of this favorite of all flowers.

Nature is at her best during the springtime. Fields and mountains throughout the country are blanketed in mantles of green, highlighted with the magnificence of the fragile rose-tinted blossom of the cherry tree. And the days are clear with a gentle sun warming the spring breeze; the temperature averages 18 degrees Centigrade to bring joy to all with the arrival of this glorious time of year.

The cherry tree belongs to the rose family and more specifically to the genus "Prunus." It is to be found in wide areas of the temperature zone in the northern hemisphere. From 20 to 30 different species of the tree are to be found in Japan and China alone.

Practically all the cherry trees in Japan are indigenous to the land. They differ from those of China and Europe in that they are cultivated for the beauty of their blossom and not for fruit as in other regions. Roughly speaking, Japanese cherry trees include four species of the *yamazakura* type, two species of *higanzakura* and several others including the *minezakura*. If hybrid species are included, the number would total several hundred. Some of the trees in Japan are more than a thousand years old and the circumference of their trunks measures about 10.5 meters.



CHERRY blossoms have been admired and loved by the Japanese people from ancient times. They are frequently mentioned in literature and used as a major theme in the arts; in fact, they hold an especially deep emotional meaning in the daily lives of the people.

Ancient Japanese anthologies such as the Kojiki (The Ancient Chronicle), the Nihonshoki (Chronicles of Japan) and the Manyoshu (Myriad Leaves) contain numerous references to the cherry blossom. One hundred of the 130 poems in the Kokin Waka Shu (Collection of Ancient and Modern Poems), published in 905 A.D., sing the praises of this delicate flower.

Cherry blossoms frequently appear in Noh, Kyogen and Kabuki plays, not only to clearly mark the season of the play (the cherry blossom being the truest symbol of spring) but to heighten the emotional appeal by the dropping of the fragile and short-lived petals. Artists and sculptors alike have produced many works using the gentle cherry blossoms as the central theme.

However, the close tie between the cherry blossom and the people is most eloquently indicated by the seasonal activity known as *Hanami* or "Flower Viewing." When the cherry trees start blooming, it is a common sight to see many groups of people gathered under the blossom-laden trees, in the parks and along the banks of rivers, enjoying an outing together, eating and drinking and relaxing in a joyful atmosphere.

Some of the most famous sites for viewing the cherry blossom include Mt. Yoshino in Nara Prefecture, where some of the trees are more than a thousand years old; Arashiyama Park in Kyoto and Sakuragawa in Ibaraki Prefecture. In Tokyo, there are also many famous places for *Hanami*. Unfortunately, however, many of the once famous trees no longer bloom as profusely as before having been adversely affected by the fumes from the exhaust of the increasing number if automobiles as well as industrial smoke from factories and dust from construction projects.

Research is now being undertaken to find a method to prolong the life of the cherry blossom. One study has already succeeded in prolonging the life of the flowers for at least 15 days.

Cherry tree saplings, as a symbol of Japanese friendship, have been sent to numerous countries throughout the world. One of the more famous places where Japanese cherry trees now bloom abroad is along the banks of the Potomac River Tidal Basin in Washington, D.C. surrounding the Jefferson Memorial. Like a child for its parent, these trees have provided slips with which cherry trees in Tokyo have recently been re-envigorated.



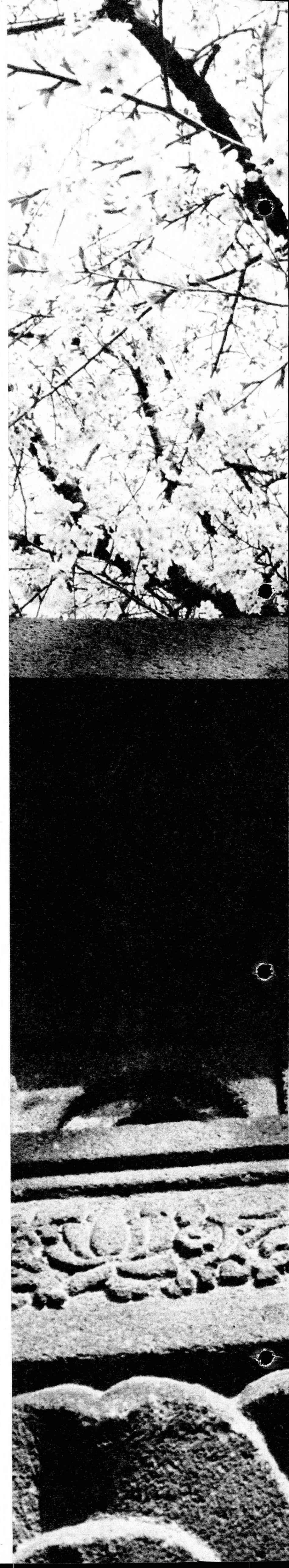
Magnificent but fragile cherry blossom is considered the national flower of Japan. It seldom lasts more than three or four days.



The most famous sites for viewing the cherry blossom include Nara and Kyoto. Photo above was taken at the Heian Shrine in Kyoto and photo right at Nara Park.











The cherry blossom is the truest symbol of spring in Japan. In April, the whole regions in Kansai are highlighted with magnificence of the rose-tinted blossom of the cherry tree.

Photographed by NOBUAKI FUKUI

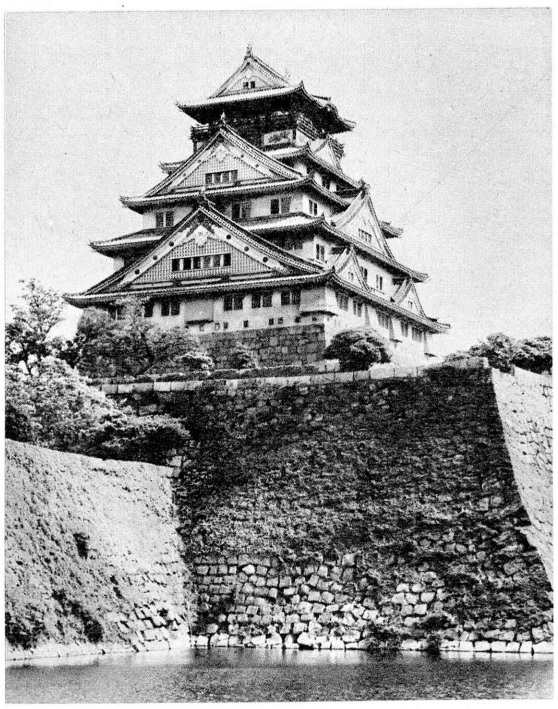
What to See around Osaka

Those visiting Osaka on the occasion of EXPO '70 will have a golden opportunity of taking in many sights characteristic of traditional Japan, for Osaka is ideally situated as a base for sightseeing in what is a star-studded tourist area.

Among the attractions of the district are: Kyoto and Nara, two ancient capitals and world-famous treasuries of Buddhist Art, Ise-Shima National Park, Yoshino-Kumano National Park, the two modern industrial cities of Osaka and Kobe and Himeji Castle.

Osaka

Osaka, the host for EXPO '70, is the second largest city in Japan next to Tokyo with a population of 3,200,000. It is the commercial, industrial as well as administrative center of West Japan, and with Tokyo shares the Japanese economy and culture. Many industrial ventures originated in Osaka, especially newspapers as well as department stores and most of the important entertainment enterprises.



Osaka Castle, the landmark of the city.

Situated around the River Yodo which flows into Osaka Bay, the city was crisscrossed with many canals, for which reason it was often called the "town of water." Many of the canals, however, have been filled in to provide space for a network of expressways which thread their way through the downtown districts, as well as underground parking areas.

Osaka's attractions for foreign tourists are the magnificent Osaka Castle—originally built in 1586 and reconstructed in 1931, the Bunrakuza—the only theater in the country devoted solely to the traditional *bunraku* puppet shows, and its Dotonbori amusement quarter.

Other places of interest include: Midosuji Boulevard, a 44-meter wide main thoroughfare running through the central part of the city for a distance of about four kilometers; Nakanoshima, the civic center of the city and Tsutenkaku Tower, a 103-meter high tower in the Shinsekai quarter with an observation platform from which one can obtain a panoramic view of the prosperous city.

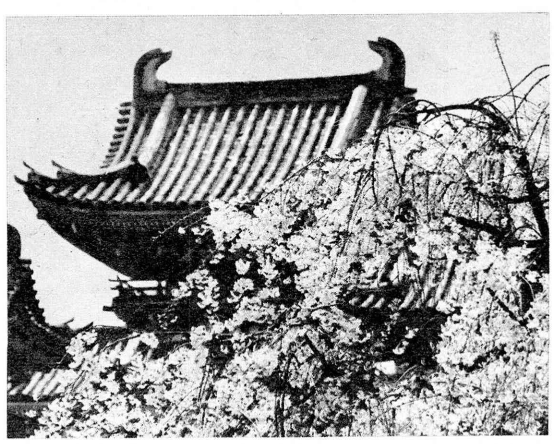
Kobe

Kobe (30 minutes from Osaka by electric train) is very familiar to foreign tourists, and with Yokohama it is one of the two main front gateways to Japan by sea. The city itself is favored with such places of interest as the Rokko Mountain Range which is a part of the Inland Sea National Park, Suma Beach and Arima Hotsprings. From atop Mt. Rokko, reached by a cable car, one can obtain a fine view of the city and Osaka Bay where numerous ocean-going ships dot the tranquil waters.

Souvenir shops in Motomachi—former foreign settlement—enjoy a well-established popularity among tourists for the shopping convenience they offer. The city also offers excellent food, *sake*, Japanese rice wine, brewed at Nada, and Kobe beef that never fails to satisfy the tourist's appetite.

Kyoto

Kyoto was the capital of Japan and the center of the nation's civilization for more than 10 centuries, from 794 to 1868. Teeming with historical and religious traditions and noted as the birthplace of those arts and crafts of old Japan which have won worldwide admiration, Kyoto has achieved for itself a unique name among the great cities of the world. Picturesquely nestled among the surrounding mountains, it still exudes an old-world atmosphere.



Heian Shrine in April.

Imposing shrines and temples, and places with elaboratelly designed gardens attest to the glory and splendor of Kyoto. In all, the city has over 200 Shinto shrines and some 1,500 Buddhist temples. Kyoto today, however, is not a mere repository of the old culture. With a population of 1,400,000, it ranks as Japan's fifth largest city and one of the country's most important industrial centers. It is also the educational center of western Japan, with more than 30 universities and colleges



Kiyomizu Temple stands on a cliff.

Places of interest are: Kiyomizu Temple, standing on a cliff with a wide wooden veranda in front and commanding a fine view of the city; Heian Shrine, built in 1895 to commemorate the 1,100th anniversary of the city's founding and famous for the cherry trees in the garden; Higashi Honganji Temple; the largest wooden structure in the city; Nishi Honganji Temple, one of the finest existing examples of Buddhist architecture; Ryoanji Temple (see page 54); Katsura Imperial Villa (page 52), Sanjusangen-do Hall (page 62); and Kinkakuji Temple (page 55).

Gion Corner offers foreign tourists a chance to enjoy the traditional Japanese arts. Shown twice a day are tea ceremony, flower arrangement, Kyoto-style Japanese dance, *koto* music and *gagaku* (court music).

Nara

Nara was the capital of Japan between 710 and 784 and it was during these 74 years, known as the Nara Period, that Buddhism introduced from China in the middle of the



Todaiji (left) and Kofukuji (right).

6th Century reached its apex of glory. Truly Nara was a Buddhist paradise and many splendid temples were constructed. And for these tempels various kinds of Buddhist images and paintings of high artistic value were produced. The city has still many classical Shinto Shrines and Buddhist Temples from which much can be learned about Japan's distant past. These structures are situated in the midst of scenic surrounding, in a highly restful atmosphere.

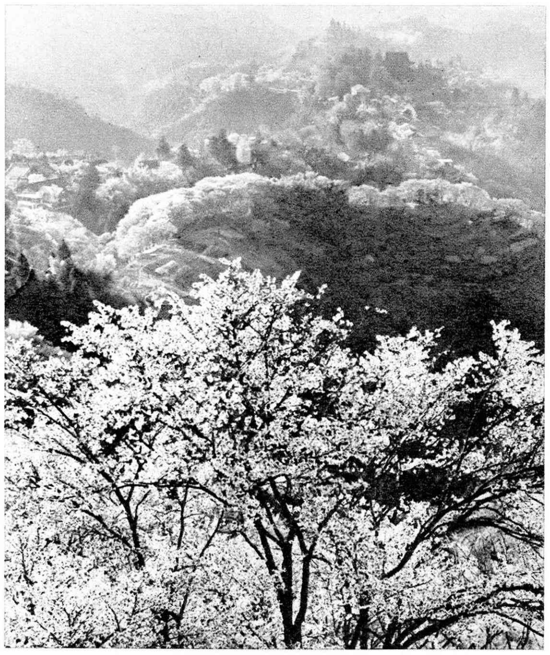


"Flower viewing" at Wakakusa-yama.

Places of interest are: Great Buddha of Todaiji Temple (see page 63); Nara Park, popularly known as Deer Park because of the more than 1,000 tame deer roaming there; Kofukuji Temple, known for its five-story pagoda; Kasuga Shrine one of the most famous and oldest Shinto shrines; Horyuji Temple (page 60); Toshodaiji Temple, the most valuable of the surviving 8th-century structures; and Yakushiji Temple (page 59).

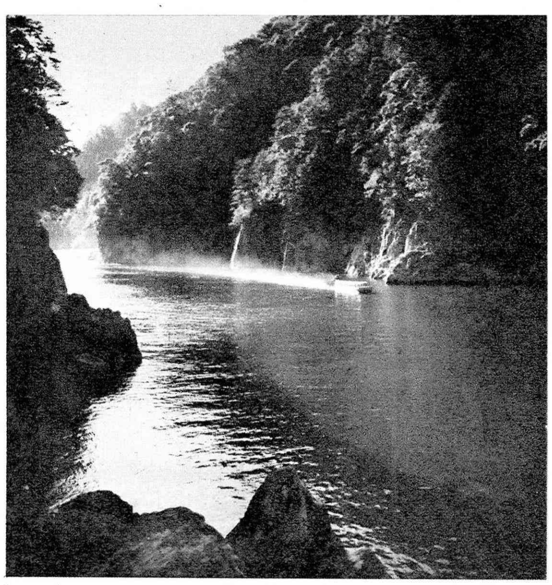
Yoshino-Kumano National Park

The Yoshino-Kumano National Park features such contrasts of scenery as Mt. Yoshino, the Kumano River and the coastal scenery of the Kii Peninsula.



Cherry trees of Mt. Yoshino.

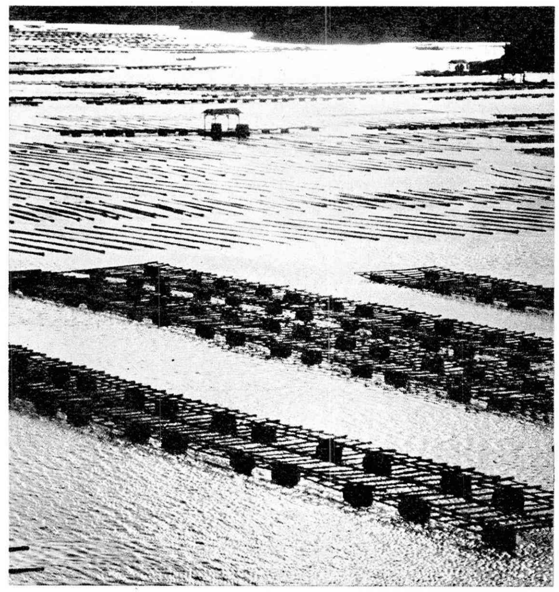
Mt. Yoshino, with its long history and various legends, is famous for its cherry-trees. There are four large groves of these on the Yoshino hills totaling some 100,000, each known as *Hitome-sembon* (One Thousand Trees at a Glance). The Toro Gorge, counted among the finest gorges in Japan, the Nachi Waterfall whose waters cascade down from a height of 130 meters, many shrines and temples with long histories attract sightseers from all over the country.



Placid stream of the Toro Gorge.

Ise-Shima National Park

The Ise-Shima National Park is a sunny beach park of shrine and pearl fame. The Grand Shrines of Ise, consisting of the Naiku (Inner Shrine) and the Geku (Outer Shrine), are the most venerated of all the Shinto shrines in the country. The shrine buildings have preserved their original form for nearly 2,000 years. Shima is a fine beach park and the birthplace of cultured pearls. On the mirror-calm waters of Ago Bay, the scenic center of the area which is dotted with lovely pine-clad islands, are many rafts supporting pearl oysters, where woman divers collect mother of pearl.

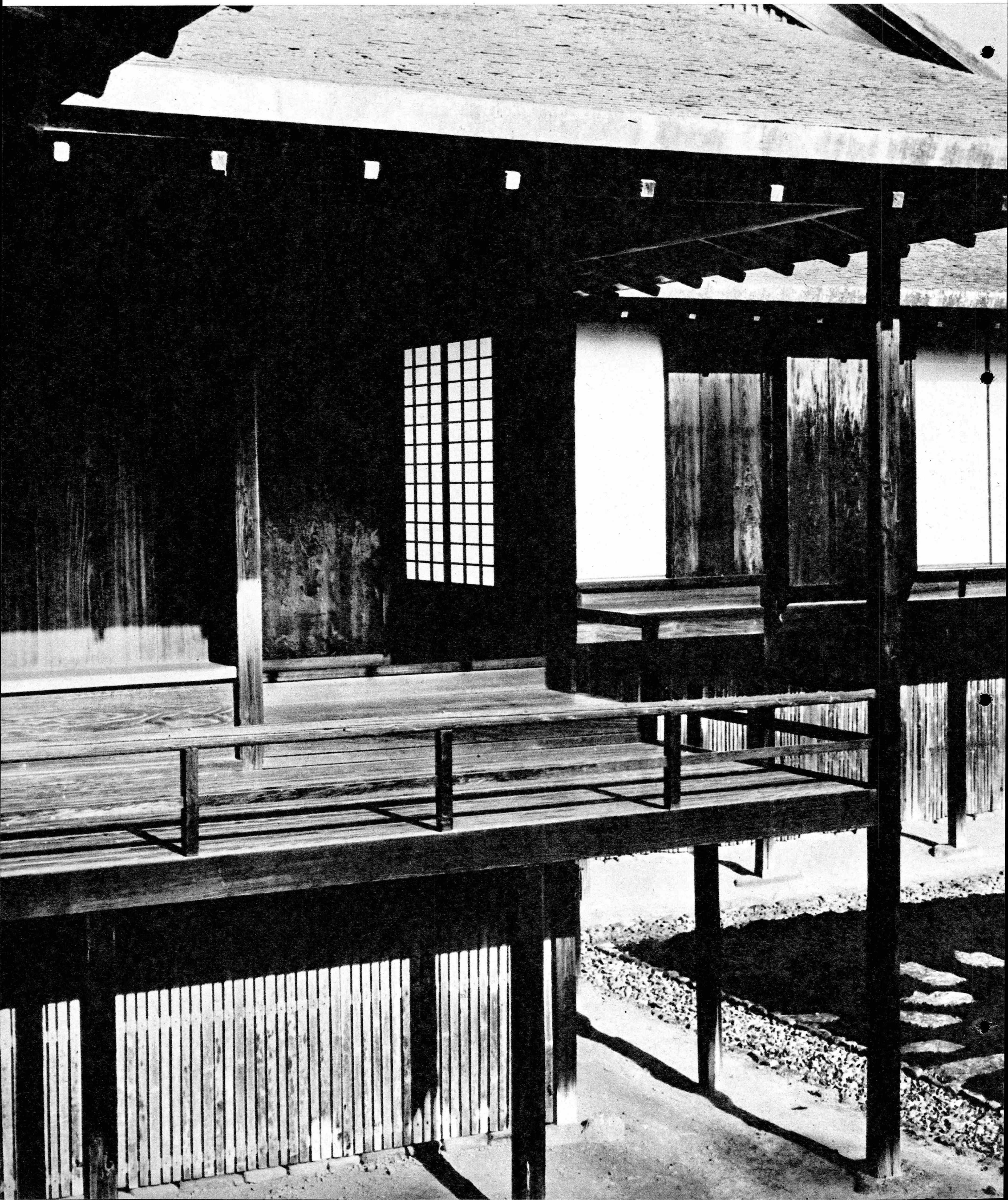


Pearl rafts on Ago Bay.

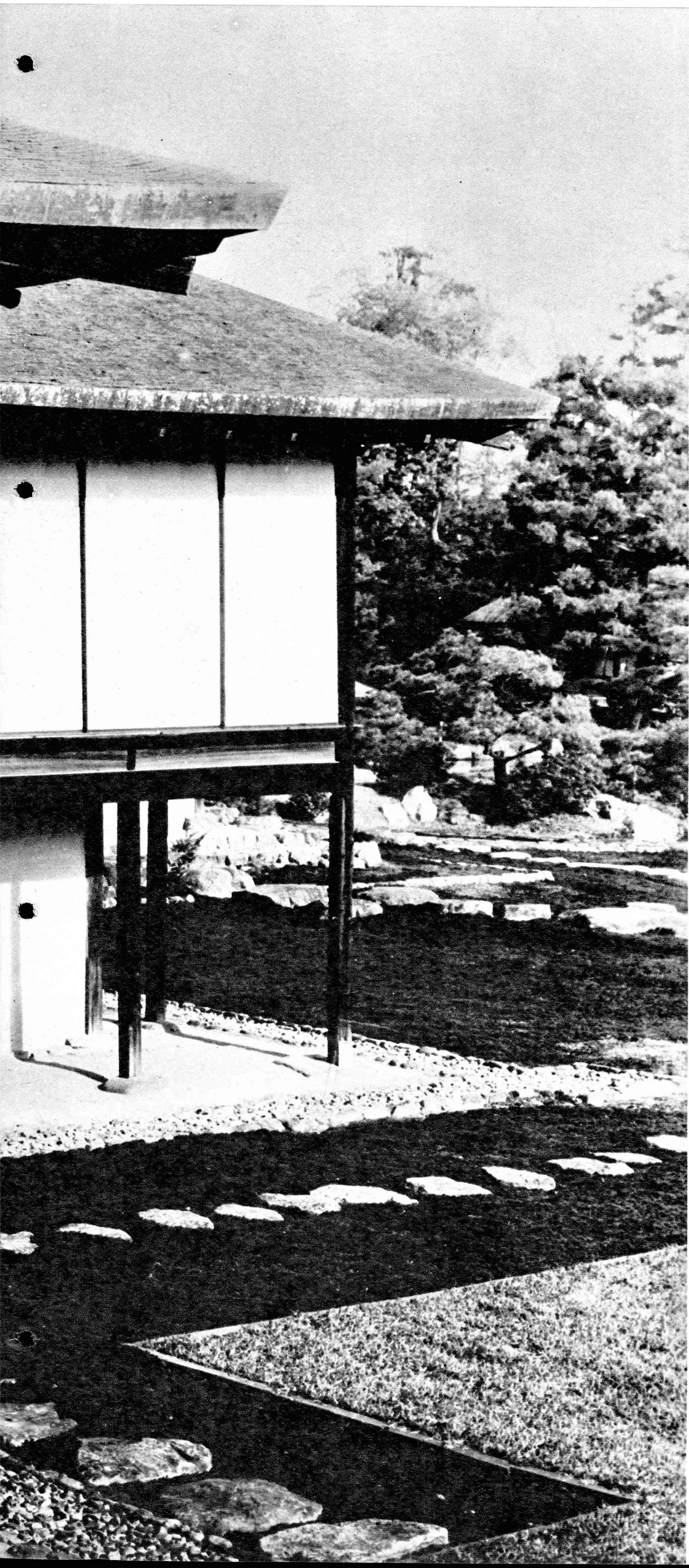


Precinct of the Ise Grand Shrine.

Treasures of Japan's



Traditional Culture



The Kansai district (also called the Kinki region) centering on Kyoto and Osaka—both a 30-minute ride by electric train from Osaka, the site of the Japan World Exposition (EXPO '70)—is the cradle of Japanese culture and the veritable treasure house of the nation's traditions. Buddhist temples, their images and Shinto shrines in the district may well be termed really countless. Many of them boast great dignity and artistic value against an historical background spanning more than 1,000 years.

The Kansai district is where primitive Japan became a unified State. From the sixth to seventh century, the capital of Japan—that is, the site of the Imperial Court—moved from one place to another in the Nara region. In the meantime, Buddhism, introduced from China by way of Korea in the mid-sixth century, gradually took root. The Horyuji Temple, said to be the world's oldest wooden structure preserved to this day, was built in 607 A. D.

In 710 A.D., the present Nara became the nation's capital. In the so-called Nara Period lasting 74 years, Buddhism reached a peak of prosperity. Under the protection of the Imperial Court, a large number of grand temples were constructed in Nara one after another in which numerous Buddhist images were created for worship.

In 794 A.D., the Imperial Court was removed to Kyoto. And for about 1,100 years until the Court was transferred to Tokyo at the time of the Meiji Restoration in 1868, Kyoto was the capital of the nation. In the 13th century, "bushi" (samurai or warriors) replaced the nobility as the actual holders of the reins of government. In consequence, the seat of government shifted from Kyoto to Kamakura, or Edo (now Tokyo). In spite of this, however, Kyoto, the site of the Imperial Court, continued to thrive as the center of Japanese culture. Kyoto's cultural legacy, built up over 1,100 years, is really inexhaustible. For instance, the City of Kyoto has now as many as 1,500 Buddhist temples and 200 Shinto shrines (Shintoism is Japan's indigenous religion which existed before the arrival of Buddhism). In Japan, especially important cultural assets are protected by law as "national treasures." And a quarter of these "national treasures" are concentrated in Kyoto.

It is not too much to say that the whole of Japan's traditional culture was born in the two ancient capitals and their vicinities. Introduced here is representative architecture, Buddhist images and gardens, located in this treasure house of traditional culture. These are the veritable treasures not merely of Japan but also of the world.

Katsura Imperial Villa

The Katsura Imperial Villa, situated in the southwestern suburbs of Kyoto, was built in the 17th Century as a country house for an Imperial Prince and is the very finest example of traditional Japanese architecture and landscape gardening. The Villa contains the residence as well as teahouses, each with its own small garden and all arranged so as to overlook the large central pond.



Rock Garden of Ryoanji Temple

The world-famous rock garden of the Ryoanji Temple in Kyoto is regarded as one of the masterpieces of Soami, who was greatly influenced by Zen philosophy. Surrounded on three sides by a low mud wall, the garden, designed to be seen from the abbot's residence, is composed of raked sand and fifteen stones, in clusters of three, two and three. The garden is considered the purest example of the Zen ideal in the studied elimination of extraneous detail and color.





Gold Pavilion

The Kinkaku or Gold Pavilion in Kyoto, a gilded building of three stories with a bronze phoenix on the roof, was originally built at the end of 14th Century by the Shogun Ashikaga Yoshimitsu. It was originally designed as a villa, but the Shogun's son and successor Yoshimochi, in obedience to his father's will, turned it into a Buddhist temple by the name of Rokuonji. It was burned by a psychopathic monk in 1950, but was rebuilt in 1955 in its original form.

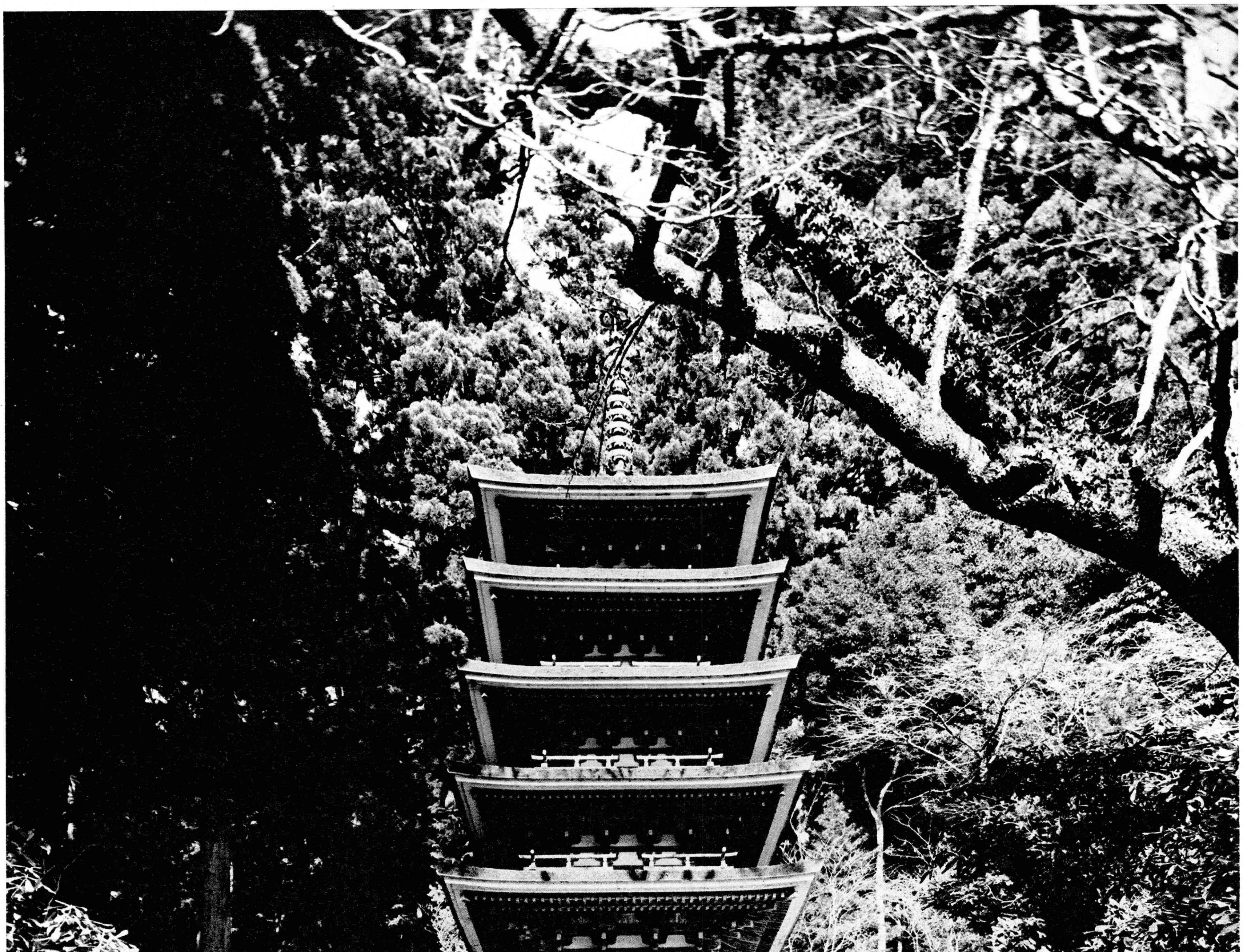


Phoenix Hall of Byodoin Temple

The Phoenix Hall (national treasure) of the Byodoin Temple in Uji near Kyoto is one of Japan's most famous buildings, and is depicted on the ten-yen coin. The hall built in 1052 was designed to represent a phoenix, or *ho-o* — a mythological bird of Chinese origin—in the act of descending to earth. The body is represented by the central hall, the



wings by the lateral corridors and the tail by the rear corridor. The exterior of the hall is painted red.



Five Storied Pagoda of Muroji Temple

The Muroji Temple in Muro near Nara is situated amid verdant green and has a long history. The temple was originally founded in 681 and restored in 824. Among the many buildings in the precinct, the most famous is the 16.2 meters high five storied pagoda (national treasure) which, although small in size, is considered to be the finest specimen of its kind.



East Pagoda of Yakushiji Temple

The Yakushiji Temple in the western suburbs of Nara was built at the end of the 7th Century but destroyed several times by fires and earthquakes and reconstructed. Only the three storied East Pagoda (38 meters in height) retains its original form. This appears to be six storied as each is built like two stories with *mokoshi* or additional wooden roof. This pagoda, designated a national treasure, is thus very highly valued for its unique shape.



Horyuji Temple

Horyuji in Nara founded at the beginning of 7th Century by Prince Shotoku, the great protector of Buddhism, is the oldest temple extant in Japan. The main structures, including the five storied pagoda measuring 32-meter in height, which have been preserved intact in their original shape and arrangements, are considered to be the oldest wooden structure in the world. The temple is also a priceless treasury containing hundreds of rare objects of Buddhist art embracing over 13 centuries which are protected by as national treasures.

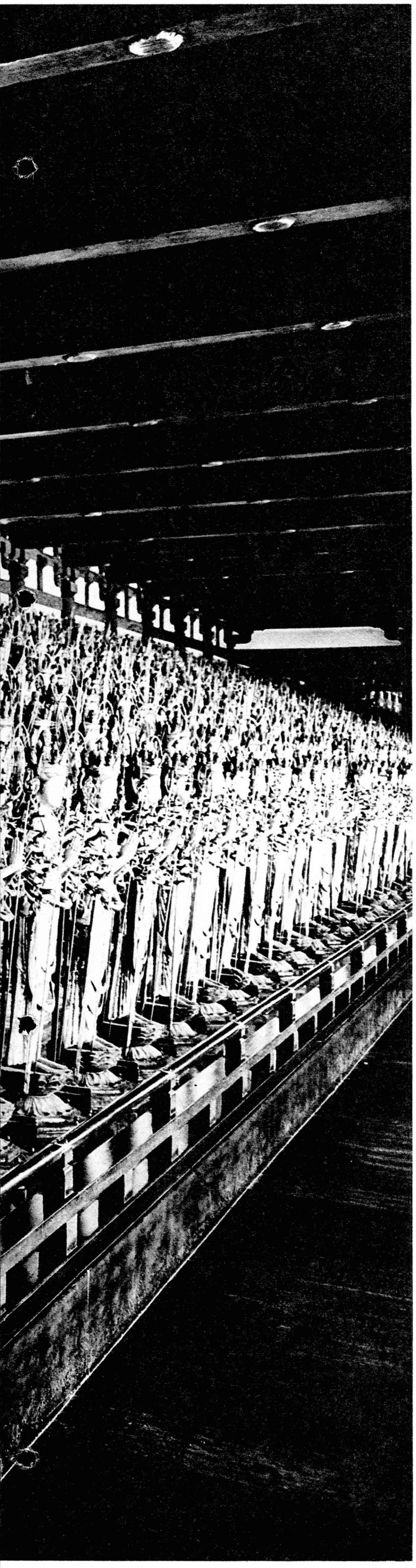
Inner Shrine of Ise Jingu

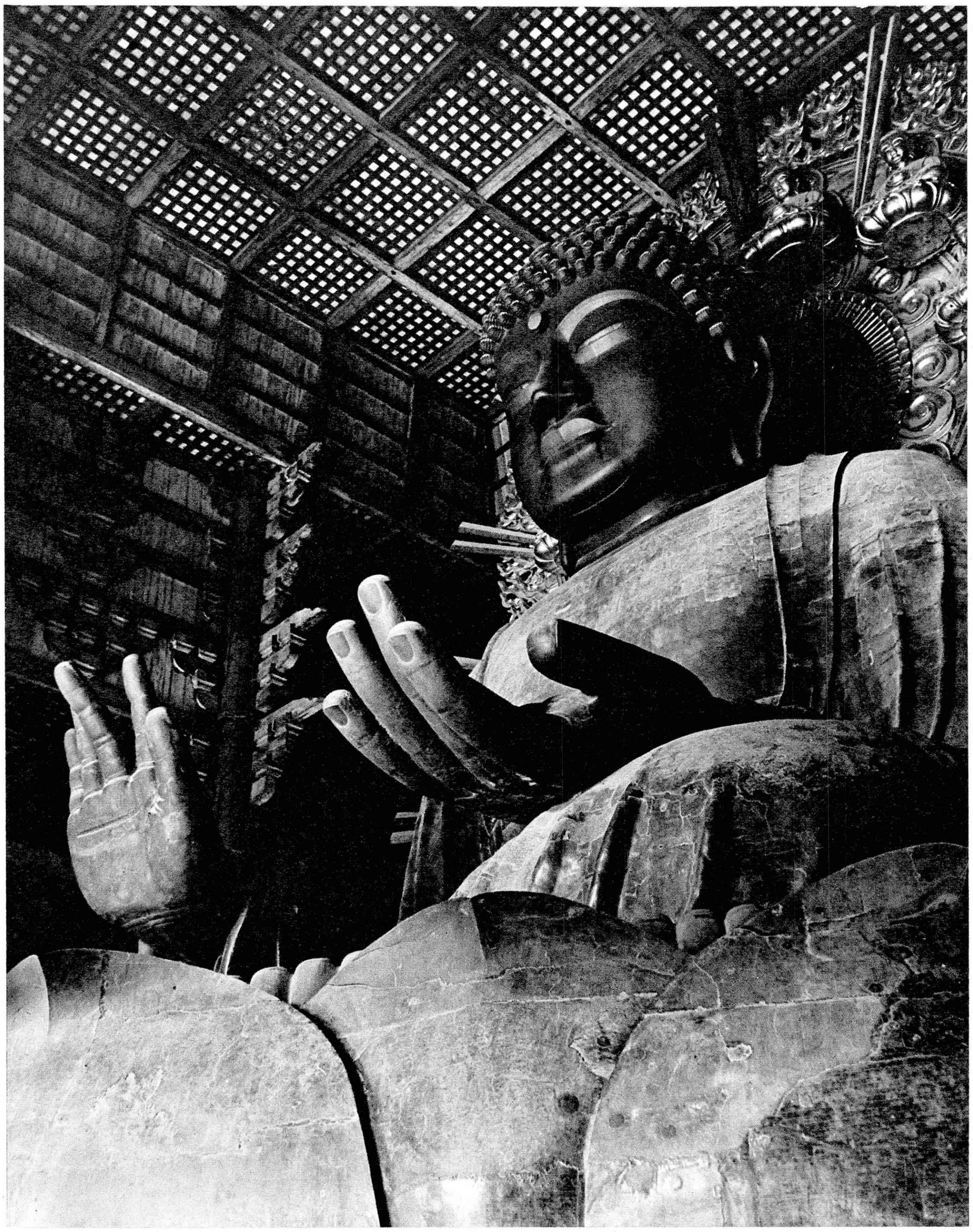
The Ise Shrines in Ise City, Mie Prefecture, consist of the Naiku (Inner Shrine) dedicated to the Sun Goddess, and Geku (Outer Shrine) dedicated to the Goddess of Farms and Crops. These shrines are constructed of plain *hinoki* wood (Japanese cypress) obtained from the state forests. In form they represent the archaic Japanese style that prevailed before the introduction of Chinese architecture, with the crossbeams on the roof and the wooden frames on top patterned after prehistoric Japanese structures.





Photos by Yukio Futagawa (pages 56, 58, and 61), Yasukichi Irie (59 and 60), Michio Noguchi (63), and Ministry of Foreign Affairs (52, 54, 55 and 62).





Buddhist Images of Sanjusangendo

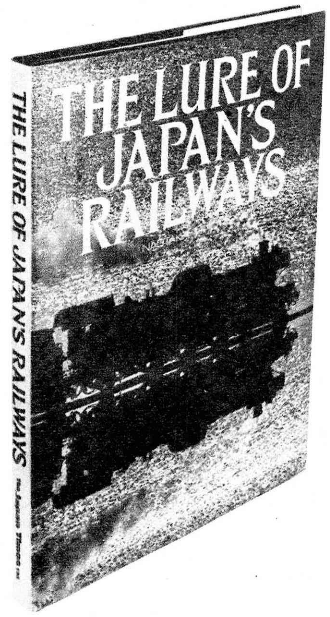
The Sanjusangendo Hall in Kyoto was so named because of the Sanju-san (33) spaces between the pillars in the elongated structure. The original structure, erected in 1164 was destroyed by fire in 1249, but rebuilt in 1266. The principal objects of worship in the hall are the Thousand-handed Goddess of Mercy (national treasure) and 1,001 smaller images of the same Goddess. The hall is 119 meters in length and believed to be the largest wooden building, in length, in the world.

Great Buddha of Todaiji Temple

The Todaiji Temple, perhaps the most famous temple in Nara, was constructed specifically for the worship of this great Buddha (national treasure), the largest bronze statue in the world. It weighs 500 tons and measures 16.2 meters in height, the face is 4.8 meters long by 3 meters wide, eyes 1.2 meters wide, nose 48 centimeters, mouth 1.12 meters, ears 2.6 meters long, hands 2 meters and thumbs 1.6 meters in length.

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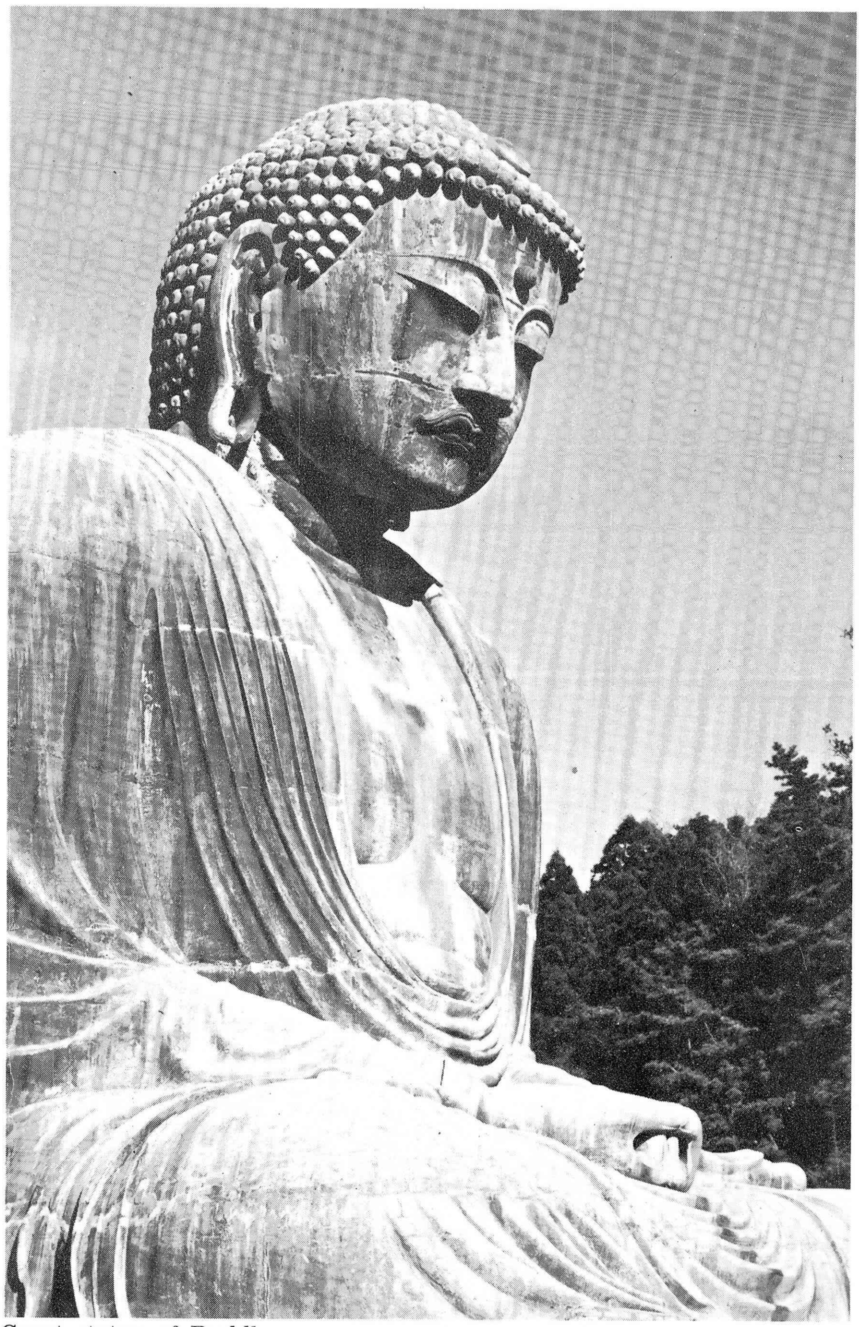
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JAPANESE BAMBOO

NEW TECHNIQUES AT EXPO '70

NIKKO FESTIVAL

1970·VOL.8·NO.3



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Japanese Currents

IMPERIAL FAMILY

Prince Aya Celebrates "Chakko-no-gi"



Prince Aya, 4, the second son of Crown Prince Akihito, stands on a checkered board in formal dress May 11 in the ceremony of Chakko-no-gi (putting on formal "hakama").

SPORTS

Japanese Flag Raised atop Everest

A climbing party of the Everest Expedition of the Japan Alpine Club reached the summit of Mt. Everest, the highest peak in the world (8,848 meters), via the southwest ridge at 9:45 a.m. May 11.

Since a British expedition led by Sir John Hunt scaled Mt. Everest via the southwest ridge on May 29, 1953 for the first time in the world, the summit has been reached by the climbing teams of four other nations—Switzerland, China, the United States and India. The successful ascent of the Japanese party is the sixth in history.

The Japanese team, which reached the summit, consisted of Teruo Matsuura, 36, and Naomi Uemura, 29. The southwest ridge route they followed has become famous since it was first opened by Sir Edmund Hilary and Sherpa Tensing of the British team 17 years ago.

In the ascent of such a high peak as Mt. Everest, equipment has a big role to play in addition to the climbers' techniques and physical strength. The latest success in Mt. Everest climbing is called a victory of a "massive quantity" strategy. The number of the Japanese expedition members—39,—is the largest in the climbing history of the Himalayas. Furthermore, the total weight of food and equipment reached 30 tons, also a new record. Even a small generator was hauled up to the base camp set up at an altitude of 5,400 meters above the sea, and a simple wireless facsimile device was installed to receive weather charts from the Indian Meteorological Agency. The ultra-modern oxygen masks, developed by the Japanese expedition, proved highly effective. The mask is not only light and easy to handle, but has incorporated the "economizer," a bag for mixing air and oxygen, hung from the face in the case of conventional oxygen masks, into the helmet.

After the first successful ascent, the second team of the Japanese expedition also reached the summit on May 12. This consisted of Katsutoshi Hirabayashi, 35, and Nepalese sherpa, Chotture, 37.

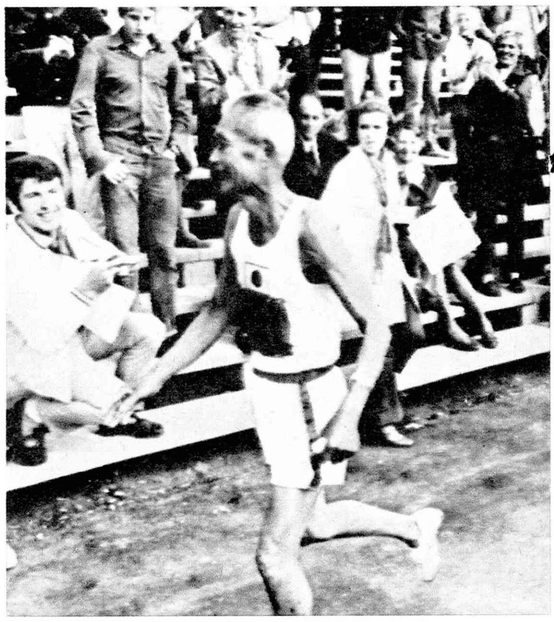


Meanwhile, the 32-member Japan Everest Skiing Expedition entered the Mt. Everest area about the same time as the expedition of the Japan Alpine Club. On May 6, its leader Yuichiro Miura, 37, successfully skied down the southern face of Mt. Everest from the South Col (7,985 meters above the sea). Down to the goal, located at 6,550 meters above the sea. The average incline was 45 degrees. Coarse snow attached to the surface of the ice, while hard ice was exposed here and there. It was the most unsuitable snow surface for skiing, liable to cause a fall. Therefore, skiing there was considered almost impossible.

However, the expedition conducted a minute survey of the route. Moreover, it developed various scientific devices for Miura, such as a life jacket, small oxygen container, and radio microphone incorporated into his helmet. The group thus challenged Mt. Everest with human strength plus the power of science.

This marked the first skiing in the world down a mountain slope from a height of nearly 8,000 meters, marked by various adverse conditions. This feat has won enthusiastic acclaim, opening a new page in the history of the Himalayas.

70-Year-Old Japanese Man Wins at World Marathon Meet



Katsuji Shinozaki, 70, of Japan won the 60-year-old or-over division of the Oldsters Annual Marathon Race held recently in Sweden. He ran the 21-kilometer course in one hour and 50 minutes. He started roadwork eight years ago after he was hit by a taxi while riding a bicycle and made up his mind to "use his own legs rather than work the pedals."

It cost him about one million yen to take part in the marathon meet. But he did parti-

cipate, declaring: "This is one big hobby in my lifetime. I want to accomplish what nobody would normally expect of such an old man as myself." This enthusiasm apparently earned him the victory despite participating in the race for the first time.

In the 40 to 49-year-old division of the same championships, Japan's Nobuyoshi Sadanaga, 41, was the victor, covering the 42-kilometer distance in two hours, 23 minutes and 52 seconds. (AP Photo)

INTERNATIONAL FRIENDSHIP

"People-to-People Diplomacy" in Full Swing

A total of 105 Japanese cities have entered into 128 "sister city" affiliations with foreign cities in 20 countries, according to a recent announcement by a federation of such cities.

The first agreement for "sister city" affiliation was concluded between Nagasaki and St. Paul, Minnesota, the United States, in 1955.

The foreign "sister cities" have for the most part something in common with their Japanese counterparts—for instance, industry and natural conditions. But Yokohama has teamed up with as many as six overseas cities.

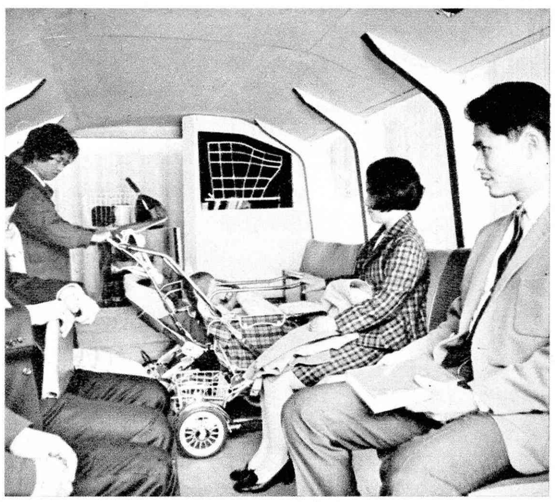
The overseas "sisters" are located in such nations as the U.S., Brazil, West Germany, France, the Soviet Union, Canada, Australia and Italy. In addition, talks for similar affiliation are now in progress with cities in other countries, including Yugoslavia, Afghanistan, Britain and Norway.

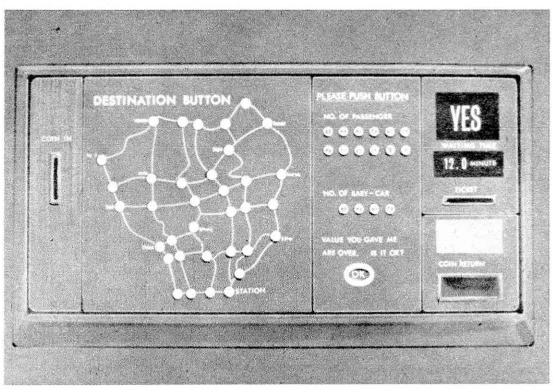
Recently, the Australian Government decided to donate its pavilion at the Japan World Exposition, Osaka (EXPO '70) to Yokkaichi, central Japan, after the end of the world's fair, in view of the Japanese city's "sisterhood" affiliation with Sydney. The design of the Australian Pavilion, it is said, was based on Katsushika Hokusai's renowned woodcut prints "Fugaku 36-Kei" (36 Views of Mt. Fuji). Australia built the structure at a cost of about 750 million yen out of an earnest desire to strengthen its ties with Japan on the occasion of EXPO '70.

The object of "sister city" affiliation is friendship and mutual understanding. And this effort is steadily bearing fruit. It is possible that all Japanese cities may form such ties with other naions in the not distant future. "People-to-people diplomacy" of this form will thus become increasingly active in the years ahead.

TRANSPORTATION

New Suburban Bus Service





Isuzu Motors, Ltd. recently announced a new suburban transport system called a "demand bus" this could replace private cars and taxis.

The prime characteristic of the "demand bus" is that within a fixed operational area, it goes anywhere at the call of a passenger and carries him to any place. In this respect, it is identical with the "wireless taxi," but differs in that the bus transports more than 10 passengers at a time. The bus is also capable of carrying baby carriages and wheel chairs.

All the passenger has to do is to insert a coin into the call box, connected with the computer of the control center, at a bus stop, and then press a destination button. Within three or four minutes, the bus, operating under instructions from the computer, arrives at the stop.

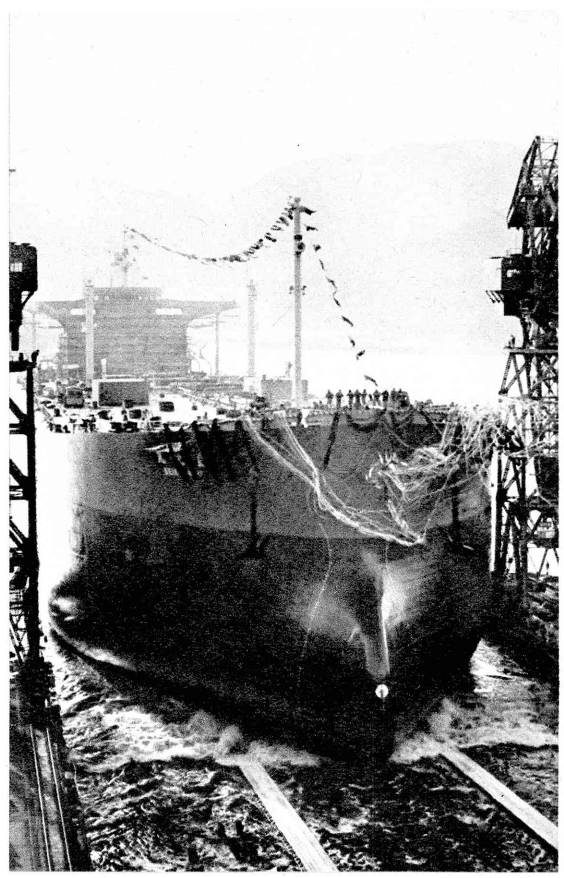
According to Isuzu Motors' survey, the waiting time is three or four minutes in the case of a suburban town with a population of 8,000 and an area of one kilometer square if the call boxes are set up at intervals of 200 meters and 12 or 13 buses with a seating capacity of 12 each are operated.

The new system, if fully adopted, can prevent traffic congestion, shortage of parking space, noise and air pollution due to exhaust fumes resulting from a sharp increase in automobiles, Isuzu Motors claims.

Photos show the inside of a mockup of the "demand bus" and the call box.

World's First Super-Automated Ship Launched

The large 138,000-deadweight-ton tanker Seiko Maru (274 meters long) was recently



Japanese Currents

launched at a dockyard of the Ishikawajima-Harima Heavy Industries. This vessel, designed for automatic control of various operations, such as navigation, engine operation and cargo handling, by means of a computer, is the world's first "super-automated ship" built for practical use. Against the background of a worsening shortage of labor, how to operate increasingly large vessels with maximum efficiency has become a major problem. Once a giant ship is involved in an accident, the possible damage and effects would be tremendous. In these circumstances, the Seiko Maru is being watched with keen interest as a trail blazer for a new age of marine transportation.

A main characteristic of the computer system installed in the Seiko Maru is that a single electronic computer is capable of simultaneous centralized control of various operations. Therefore, it can be operated even if crewmen have no advanced knowledge of electronic computers and electronic engineering.

Principal among various operations automated by the computer are the prevention of collision, the finding of the ship's position with the aid of an artificial satellite, diverse calculations relative to navigation, medical diagnosis of crewmen and cargo handling. Usually, a vessel of this size requires a crew of 36. But the Seiko Maru will be manned by only about 15.

TOKYO

"Biggest Traffic Cop" in the World

The Metropolitan Police Department has recently completed a 300 million-yen "wide-area traffic control system" designed to eliminate traffic congestion in central Tokyo through computerized control.

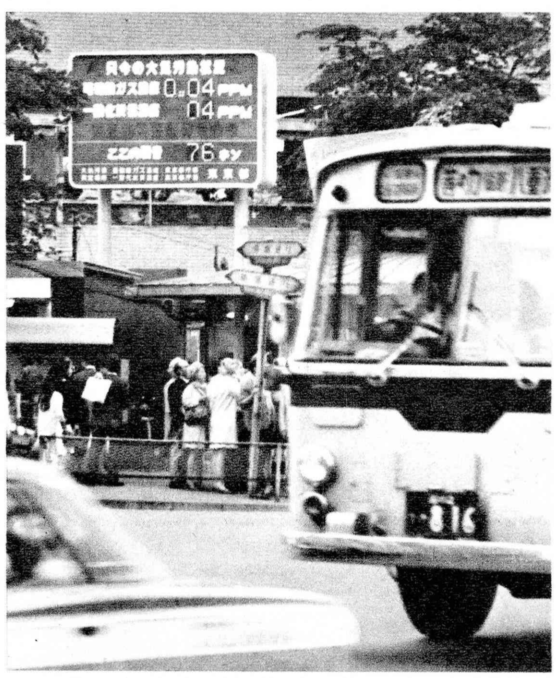
Under this system, the computer is entrusted with the centralized control of signal devices in an extensive area and instructs the device at each intersection to flash a signal according to the volume of traffic. This is the biggest system in the world for the control of traffic congestion on an extensive, multilateral basis.

The newly completed system covers 128 intersections of highly congested roads in Tokyo. By 1975, the Metropolitan Police Department plans to expand it to encompass about 2,000 intersections.

The system works this way: various devices installed in the area—such as the supersonic wave-type vehicle sensors (for measuring the volume of vehicular traffic by means of supersonic waves), the loop-type vehicle sensors (for contacting each passing vehicle with electric wires buried underground) and sensors for watching traffic congestion—transmit their information in the form of figures to the central control room of the Metropolitan Police to be fed into the computer. Promptly, the computer judges the traffic volume and the degree of congestion within the area and issues instructions to each signal device to regulate the traffic in a way most suitable to the situation in the area. This is intended to reduce the frequency of stops and the waiting time at each intersection.

Moreover, the Metropolitan Police Department is also hopeful of other favorable effects of the new system. That is, it says, the easing of traffic snarls and the reduction of waiting time will lessen the amount of exhaust fumes from motor vehicles, thus contributing to the prevention of air pollution. Furthermore, smooth traffic will save the driver from becoming irritated, and thus serve to decrease traffic accidents.

Air Pollution Warning Board



Illuminated bulletin boards have been set up at four places in Tokyo including the Sukiyabashi intersection, Ginza (photo), to inform on the state of air pollution as well as noise at the moment. The top figure shows the content of sulfur dioxide in the air, and the second the content of carbon monoxide. Both figures shown here, when photographed in the evening on May 26, were within the "safe" limit. The maximum standard set by the Tokyo Metropolitan Government for sulfur dioxide is 0.05 ppm and that for carbon monoxide 20 ppm for each hour when pollution continues for more than eight hours and 10 ppm for each hour when it lasts 24 hours. The bottom figure shows the noise level.

NEW PRODUCTS

Paper Umbrella



Various paper apparel from dresses to paper swimsuits, which can be thrown away after use, are now enjoying popularity, partly by

appealing to the consumer's curiosity. And the latest in this fashion is a paper umbrella, which has made its debut just before the start of a rainy season.

All parts of the umbrella—the 40-centimeter-long stick and the shade—are made of paper treated with special water-repelling agent. It is collapsible and unlike the ordinary umbrella has no radial frame.

If dried, it can be used three or four times. Price: 100 yen.

Portable VTR

The Akai Electric Co. has recently put a small-sized portable VTR (video tape recorder) on the market.

It consists of four component units—VTR proper, TV camera, monitor TV and battery charger.

The new VTR is easy to handle, and a simple push at the start button enables both recording and playback. Since 1/4-inch tape, narrower than the ordinary tape, is used, the machine is small and light. It is capable of continuous recording for 20 minutes with a single tape. Price: 322,000 yen.



Miniaturization of Calculators

Desk-top electronic calculators are one of the Japanese commodities which have caught on well in the overseas markets in recent years. Recently, the miniaturization of the calculators has made marked progress in this country, and even a "pocketable calculator" has made its debut.



The maker of this midget electronic calculator is Canon Inc., a world-famed camera maker. The secret of its success consists in the use of highly efficient LSI (large scale integration) instead of IC (integrated circuit).

Called "Canon Pocketronic Printing Calculator," it measures only 21 centimeters long, 10 centimeters wide and 5 centimeters thick, and weighs 740 grams. It is capable of four operations—addition, subtraction, multiplication and division—of up to 12 digits in an instant. Driven by battery, it needs no cord and therefore, can be used anywhere.

Besides Canon, several Japanese makers have developed midget electronic computers using LSI, ushering in an "age of mini-calculators." The highly efficient and convenient "mini-calculators" are believed certain to win great popularity not only in Japan but also in other countries.

FOR A BETTER FUTURE
NEW TECHNIQUES AT EXPO '70

THE Japan World Exposition, Osaka (EXPO '70) is a magnificent drama designed to visualize the future. And the leading roles are being played by the cream of actors and actresses from each nation and enterprise—that is, various new techniques and products. For Expo permits experiments which ordinarily are difficult to undertake. Then, too, EXPO '70, excellent "brains" in the research and development fields are competing and cooperating in showing off their intensive quests for a "better future."

First, the fairgrounds as a whole constitute a place of experiment in a "future city." The best of new construction techniques are given full play in the pavilions which fill the Expo site, diverse new techniques and products on display in the pavilions will reform our life of tomorrow and also hint at man's life in the 21st century. Now standing at the threshold of the 1970's, we should know of the new techniques and products making their debuts at EXPO '70—the use of computers in various aspects, many new examples of images and sounds, epochal new means of communications, such as color TV telephones and wireless telephones, linear motor car, display of future houses, spaceships of the United States and the Soviet Union, which make us keenly feel the approach of the space age, demonstration of laser beam television, etc.

Use of Computers

Some call EXPO'70 "Computer Expo." For the administration and information processing at this giant "future city," which has emerged at the Senri Hills near Osaka, are totally computerized. And at several pavilions, new techniques for the use of computers are drawing huge crowds.

First, let us visit the Computopia in the pavilion of the Furukawa industrial group, which is patterned after Japan's ancient "Seven-Story Pagoda." Here various computer shows are presented—namely, Voice Control Crane, Cashless Shopping, Computer Musical Hall and Dress Designer.

In the **Voice Control Crane** show, a machine goes into motion at the command of a human voice. When a visitor orders "Right" and "Left" into a microphone, a giant crane glides to the right and left. When he says "Ball," the crane's hand-like claws open and clasp a ball. This is a game the visitor can win if he can lead the crane to drop the ball in a hole. While other visitors look on intently, he gives the final order "Drop." If the ball drops into the goal, the machine sounds a fanfare.

A visitor, who managed to lead the ball into the hole, beaming broadly, with a medal re-

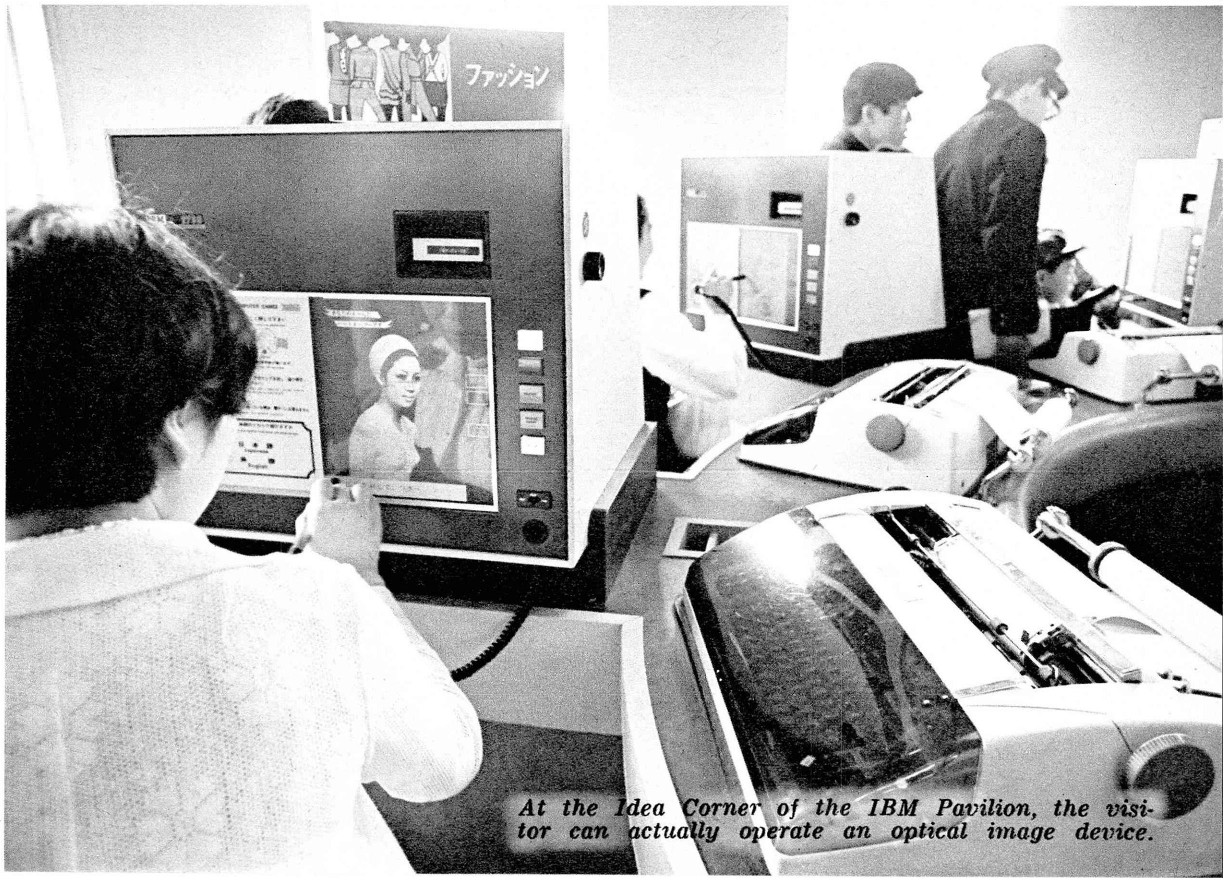


The Voice Control Crane of the Furukawa Pavilion goes into motion at the command of a human voice.

Photographed by MASAMICHI SUMIYOSHI

ceived as a memento in hand, said: "Well, I really didn't imagine being able to move a thing by using my voice alone." This game is a demonstration of an epochal new technique to have a computer understand and reply to human speech. If this technique is further advanced, dialing will become unnecessary for putting in a telephone call. All one will have to do is just mention the other party's number to the telephone.

Now for the **Cashless Shopping**. First, as soon as a depositor mentions his name into a microphone at the counter of the "Bank of Voice," his voice is registered by a computer. After depositing money, he then orders a ticket from a tourist association by TV telephone. In an instant, the computer confirms that the voice of the telephone is identical with the earlier registered voice and promptly issues a ticket.



At the Idea Corner of the IBM Pavilion, the visitor can actually operate an optical image device.



This is based on the principle that each person has a different "voice print" as is the case with fingerprints. The computer recognizes a difference in voice prints. This technique is more advanced than the voice control of the crane.

The **Computer Musical Hall** also brings the ability of the computer into full play. When a visitor strikes tube bells at random, the scale and rhythm of the sound are taken up by the computer, which promptly composes a variation with them as a theme, and this music is automatically played by the Electone. When the music resounds in the hall, abstract figures are projected onto the walls of the hall and start to dance to the tune. This dance is also choregraphed by the computer completely in accord with the music. Musical masterpieces, both old and new, have been fed into the computer in advance, and the computer improvises music according to certain rules—for instance, that "do" is usually followed by "mi."

The same principle applies to the **Dress Design Corner.** When a woman writes her favorite type, colors, size, etc. on a card and puts it into the device, the computer creates a fashion fitting the descriptions on the basis of 20,000 design patterns memorized and prints it on a one-meter-long piece of paper, which comes out in only two or three seconds.

These shows represent a technical demonstration by Fujitsu Limited, one of leading computer makers in Japan. In addition, the latest techniques are also observable at the pavilion of IBM, a major American computer manufacturer.

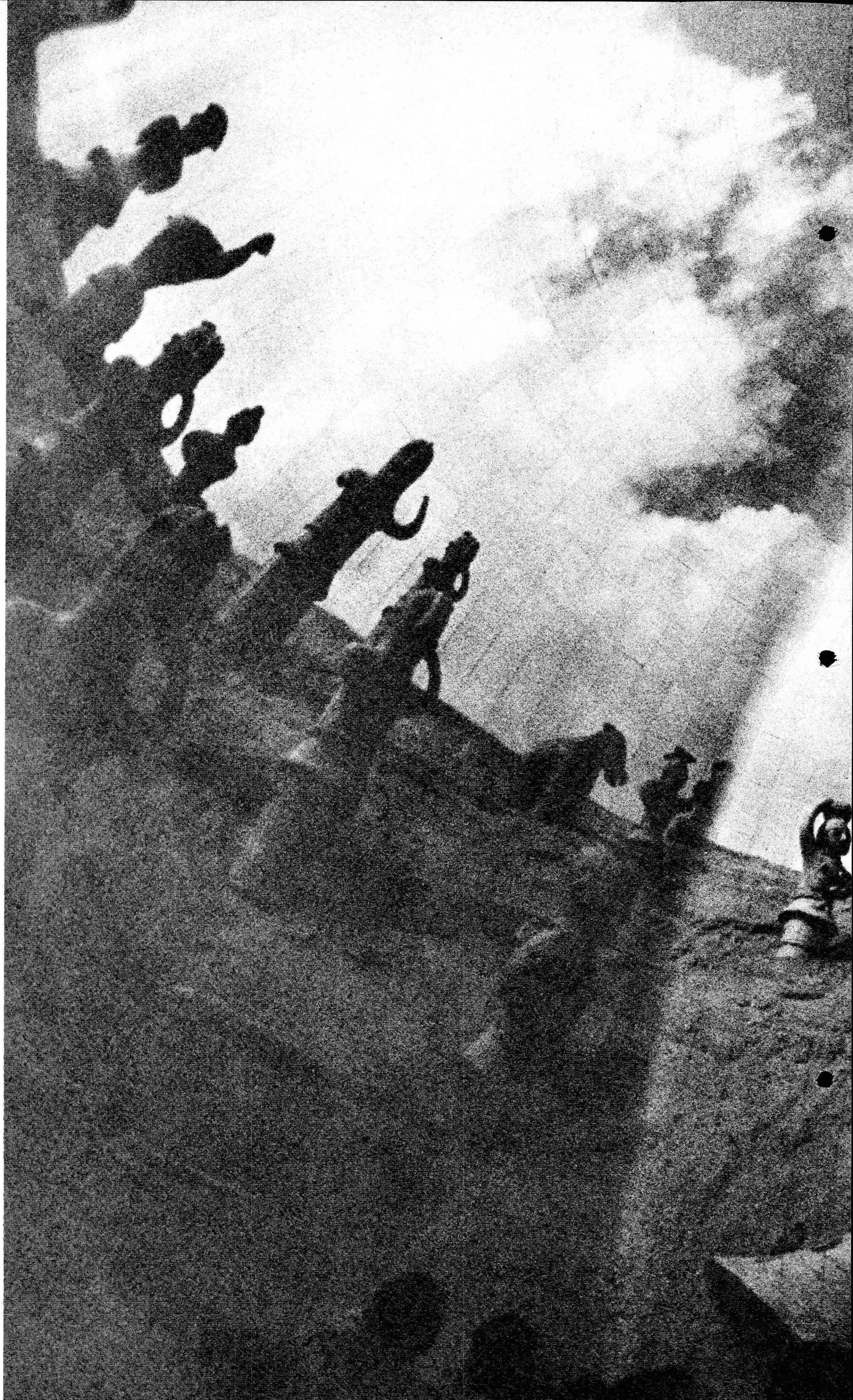
First, in the **Plaza of Dialogue**, when a visitor mentions his birthday into a computer, a man's voice promptly answers with facts and developments which happened about that date. This system operates on the same principle as that of the Voice Control Crane of the Furukawa Pavilion. The computer can understand 30 languages and also memorizes principal happenings and events for a period of 79 years from 1887 to 1965.

At the **Idea Corner**, the visitor can actually operate an optical image device, one of the most advanced techniques. This is a game in which the visitor applies a 20-centimeter-long electronic pen to a cartoon appearing on a picture-tube screen and develops a story freely. The computer projects images on the screen at the command of the pen within the bounds of 70 stories memorized.

The **Traffic Game** at the Automobile Industry Pavilion also makes full use of the computer and hints at the future of motor traffic.

A 25-meter-square ground is criss-crossed with rails like a checkerboard. On the ground, two-seater electric cars emitting no exhaust fumes move under the guidance of the computer in the control room. The cars have neither accelerators nor brakes, and the drivers can give only three course instructions—that is, ahead, right and left. In the game, participants compete in crossing the ground within three minutes. Even if a driver orders the car to go ahead, the car automatically stops or is forced in a different direction if another car is ahead of it.

Circuits directly connected with the computer are imbedded along the rails. The computer, constantly keeping track of the positions, number, destinations, etc. of all the cars, gives instructions in an instant to all of them to ensure the maximum possible efficiency in traffic. This game shows us that urban traffic completely free of accidents is not a mere dream.



Shows of Images and Sounds

Along with computers, colorful shows of images and sounds constitute a salient feature of EXPO '70. Especially in wide use is the so-called multiscreen system which projects many images on a giant screen at the same time.

A typical example is the **Multi Vision** of Fuji Group Pavilion, which has attracted attention because of its giant pneumatic structure. Once inside its huge dome, you see a supersized screen 13 meters in height and 19 meters in width. At first glance, it looks like an ordinary large-sized cinema screen, but when the projection begins, one sees it is a multiscreen. On the screen, a large close-up of a pretty woman appears. In the next instant, the screen divides into three sections from top to bottom, each showing a different image. Then suddenly, it further splits into three horizontally, making a total of nine frames of images. In this way, various peoples of the world are shown in diverse states—loving, fighting, working, studying, etc.—with beautiful landscapes and urban scenes—a mixture of countless images unfolding one after another. The swift and continuous change in images enthralls the spectators with a strange charm never seen in ordinary films.

Furthermore, as the myriad images come and go on the screen, 20 slide projectors throw various images, called Mandara, onto the inside walls of the pavilion, enveloping the spectators in a flood of images. This may well be called a sort of "environmental art." The visitors, totally immersed in images and music from all sides, experience a new sensation they have never before experienced.

Another notable example is the **Astrorama** of the Midori Pavilion. Here five projectors cover the entire interior surface of a giant dome, 23 meters high and 30 meters in diameter, with movies, which are completely synchronized with sounds from upward of 500 speakers. At the Toshiba-IHI Pavilion, a circular theater (actually, a hydraulic-type elevator) accommodating 500 spectators is situated inside a dome. On a total of nine screens surrounding the theater, images of young people's life throughout the world are projected, while the theater slowly rotates or stops in consonance with the images in order to enhance the impact of the images on the spectators.

Other new visual shows unfold at the Mitsui Group Pavilion, the Suntory Pavilion, the Japan Pavilion, the British Columbia Pavilion and the Mitsubishi Pavilion.

The **Space Theater** of the Steel Pavilion, meanwhile, is in itself a giant musical instrument. More than 1,000 speakers are installed in all parts of its interior, enabling the visitors to enjoy plural musical performances in harmony with laser beam projections. Here they can experience various new patterns of sounds



The Astrorama of the Midori Pavilion. Five projector cover the entire interior surface of a giant dome.

—for instance, shift of sound from speaker to speaker, "blowing through space" of sounds, and the whirling and dispersing of sounds.

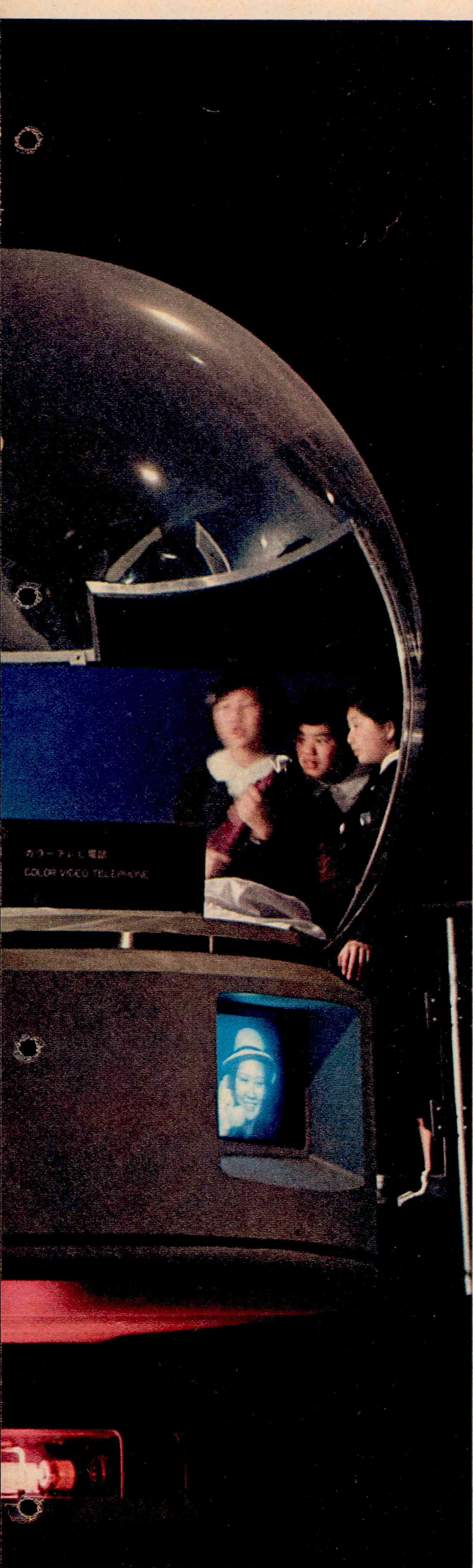
All of these visual and sound shows are identical in that they are designed for "environmental production," which appeals to the five senses of the spectators more strongly than ever and envelops them from all sides. Here the conventional concepts of simple films, music, illumination and stage arts no longer apply. All techniques, including architecture, which provides a place for performance, and various devices, are synthesized closely to produce unique effects. The various shows of images and sounds at EXPO '70 may well be called the curtain raisers of a new art, which makes the spectators sense something by changing the whole of their environment—or the "environmental art" as it is called at the exposition. At the same time, the colorful shows represent giant experiments in new techniques. Cameras, projectors, lenses, screens, films, speakers, etc . . . . everything has been newly developed. And these techniques will without doubt be further advanced and improved, and eventually enter our daily life.



"Computer Musical Hall" of the Furukawa Pavilion. When a visitor strikes tube bells at random, the scale and rhythm of the sound are taken up by the computer which promptly composes a variation with them as a theme and this music is automatically played by the "electone."

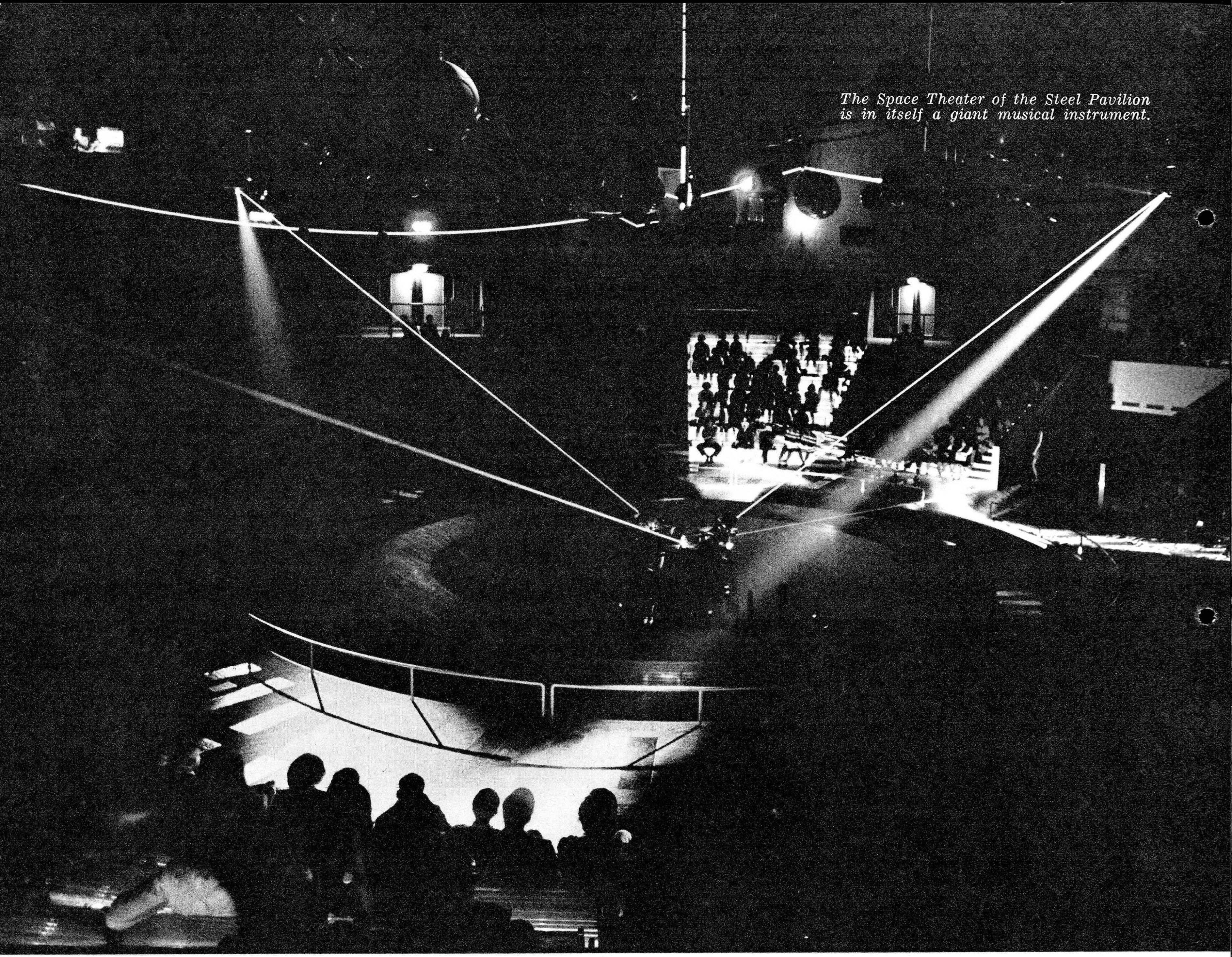


"Laser Color TV Telephone" exhibited at the Telecommunication Pavilion. Both picture and voice signals are transmitted by laser beam.





"Capsule Room" for personal use exhibited at the Sanyo Pavilion. It provides a hint to the question; "What would become of our future housing?"



The Space Theater of the Steel Pavilion is in itself a giant musical instrument.

Wireless Telephone System and Laser Communication

Various means of communication taking full advantage of the most advanced electronics, such as TV telephone, are put to practical use at the EXPO '70 site. But worthy of particular note is the **wireless telephone system** at the Telecommunication Pavilion—that is, a telephone without a telephone line. This telephone weighing 650 grams is only a little larger than the conventional hand set now in use, and can be carried with ease. A product of three years of development effort by the technical staff of the Nippon Telegraph and Telephone Public Corporation, it is, as it were, a bundle of transistors and has 12 buttons. Of these buttons, 10 represent figures from 0 to 9 with the two others colored red and blue. If you wish to call 03-453-5311, for instance, you have only to push the figure buttons in that order. This sets the switchboard of a telephone exchange in motion, connecting the call with the other party. The system also works the other way around. You can call a number of the wireless telephone from the conventional telephone. The wireless telephone system also connects with the international telephone service, to say nothing of toll lines.

However, the wireless telephone has a still more important function. That is, it can take advantage of the data communication service of the public corporation. For instance, suppose the urgent need arises to make a calculation with a computer. In that case, the figure buttons are first pressed to call the telephone number of the computer. Then they are again pushed to feed the figures you wish to be calculated. Next the red and blue buttons become necessary. By properly pushing the two buttons, you can have the computer do not only the four operations—addition, subtraction, multiplication and division, but also the root calculation in an instant. Moreover, the result of the calculation is supplied by voice. Convenient is the exact word for this wireless telephone.







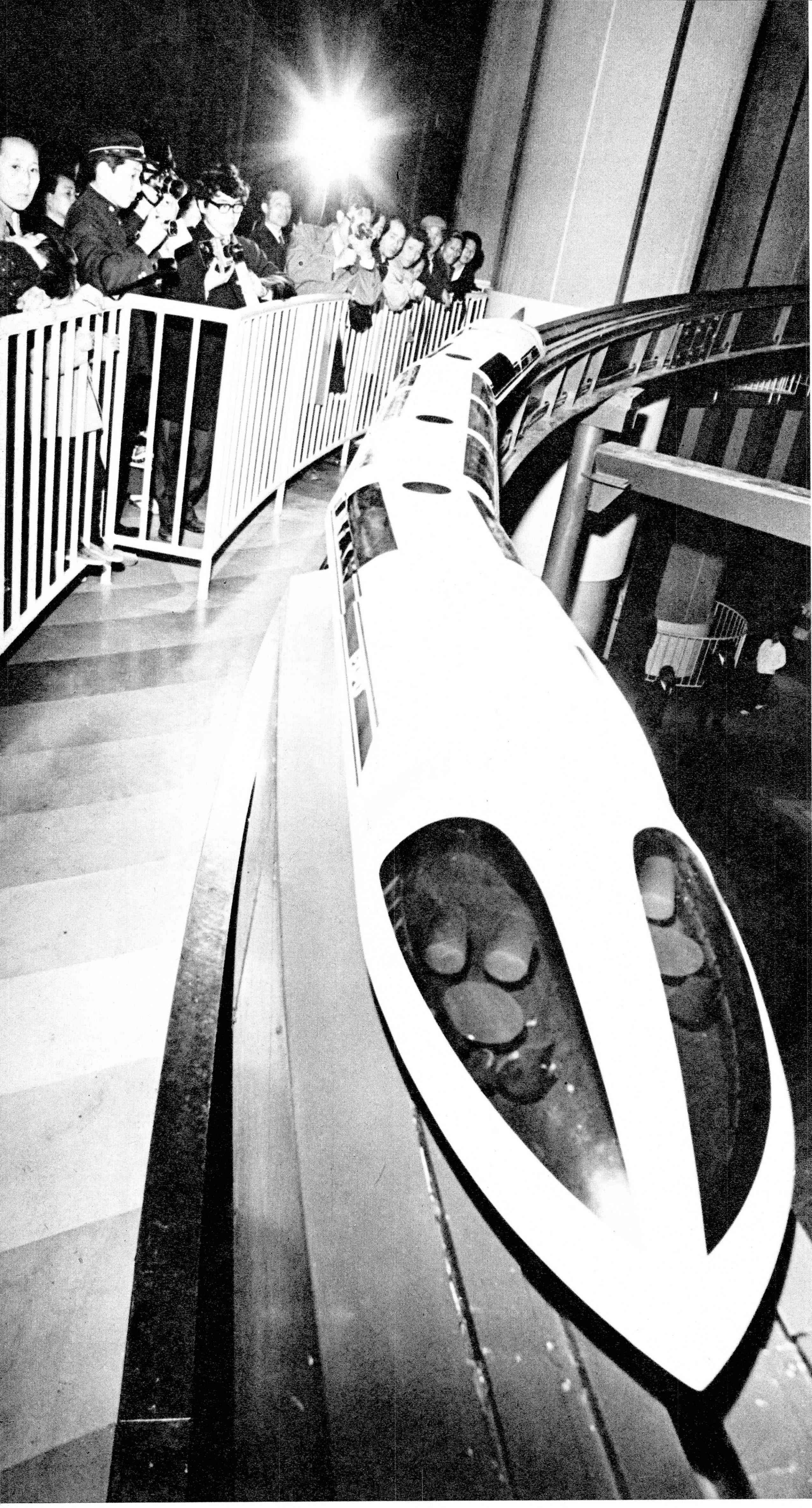
At the Telecommunication Pavilion, 100 wireless telephones are ready for use by visitors. And all using them are really surprised at the convenience of the wireless telephones. It is said that the manufacture of this "telephone for the 1970's" cost 400,000 yen apiece. And there is no doubt that it will be mass-produced in the not distant future and come into wide use in daily life. This is technologically a complete new product.

Meanwhile, the **color TV telephone** using **laser beam,** also exhibited at the Telecommunication Pavilion, is engaging keen attention as a curtain raiser for an age of laser communication. Laser beam (acronym for light amplification by stimulated emission of radiation) is more accurate in wave length than the ordinary light. Moreover, it travels a very long distance and can be focused into a small dot with a lens. In laser communication, signals are carried by laser beam. Since the beam can carry incomparably more signals than microwave simultaneously, it is attracting eager attention as a future means of communication. As for the laser color television at the Telecommunication Pavilion, both voice and picture signals are transmitted by laser beam.

At the Hitachi Pavilion, the laser beam is also used for projecting color TV on a giant screen (3 × 4 m). This is the first public demonstration of its kind in the world, and such a huge screen is unthinkable in the case of conventional picture-tube television. On display at the Soviet Pavilion are measuring apparatus for tunnel digging, which also use the laser beam. And at the Steel Pavilion and the United States Pavilion, a quaint atmosphere completely different from conventional lighting is created by the unique use of laser beams.

The laser beam was once considered "death ray" because of its extraordinary intensity and appeared in science fiction movies. But now, EXPO '70 shows the practical application of the beam is close at hand.

The Wireless Telephone demonstrated at the Telecommunication Pavilion.



Model of the Linear Motor Car displayed at the Japanese Pavilion.

Linear Motor Car

In the display room of the Japanese Government Pavilion, an exact model of the **"linear motor car"** train, now being developed by the Japanese National Railways, is operating and drawing enthusiastic attention as a "train of the future."

All of the present-day high-speed trains in service across the world, including the fastest superexpress of the New Tokaido Line of Japan, are operating on rails by turning their wheels with electricity or gas turbines, for instance. However, since friction between wheel and rail is utilized, wheels slip and run idle if speed is increased beyond a certain limit. The maximum speed limit, therefore, is about 300 kilometers per hour. But the superspeed railway of the future, if it is to compete with aircraft, will have to operate at about 500 kilometers per hour. For this, however, an entirely new propelling system is required. At present, various new systems are under study in many countries. But the linear motor car method is the most promising of them all.

The linear motor represents an application of the repulsive force of the electromagnet. Its principle is the same as that of an aluminum disc turning in the integrating wattmeter installed at each home. That is, the equivalent of the aluminum disc is placed in a railway coach, while the coil is installed in the track. When electric current is sent through the coil, the train runs just like a nail moving about on a piece of paper according to the movement of a magnet beneath the paper.

The linear motor car train, being developed by the Japanese National Railways, would link Tokyo and Osaka in only one hour (three hours and 10 minutes in the case of the present superexpress service on the New Tokaido Line), speeding at more than 500 kilometers per hour. Naturally, wheels cannot be used at such high speed. Therefore, the "magnetic floating formula" is adopted to keep the train traveling while floating above the track.

The national railways have been pushing research work on the linear motor car since 1961, and basic experiments so far have convinced them of the project's feasibility. Therefore, a construction plan will be worked out in the next five years and work undertaken in the ensuing five years.

Future Housing

If our offices and homes become more and more computerized and "informationized," and surrounded by new "environmental arts" and if the day comes when we travel by "linear motor car" trains—if all of the new techniques reviewed so far are put to practical use, what will become of our housing? An answer or a hint is provided to this question by Takara

Beautilion and the Sanyo Pavilion.

If U-shaped piles of identical size are linked both vertically and horizontally, many cubic spaces can be created. And if square boxes (that is, various rooms) are put into such cubic units, a home is formed. That is how the Takara Beautilion has been built. One of its characteristics is prefabrication. Piles and boxes of the same sizes can be mass-produced at factories, and they are simply assembled at a construction site. In the case of the Takara Beautilion, the assembly took only one week. The second characteristic is the capsule system. Various boxes or rooms—such as **kitchen capsule, living room capsule** and **drawing room capsule**—can be freely moved to any place. Removal will become very simple. All one has to do is to disconnect the "capsules," haul them by lorry and then put them into another frame, which may well be called the "branches of a tree." The designer of this pavilion contends that in order to cope with a new era of drastic technological innovation, it is first of all necessary to shake off the fixed, conventional concepts of housing.

In the Sanyo Pavilion, the ultimate of the electrified home life can be experienced.

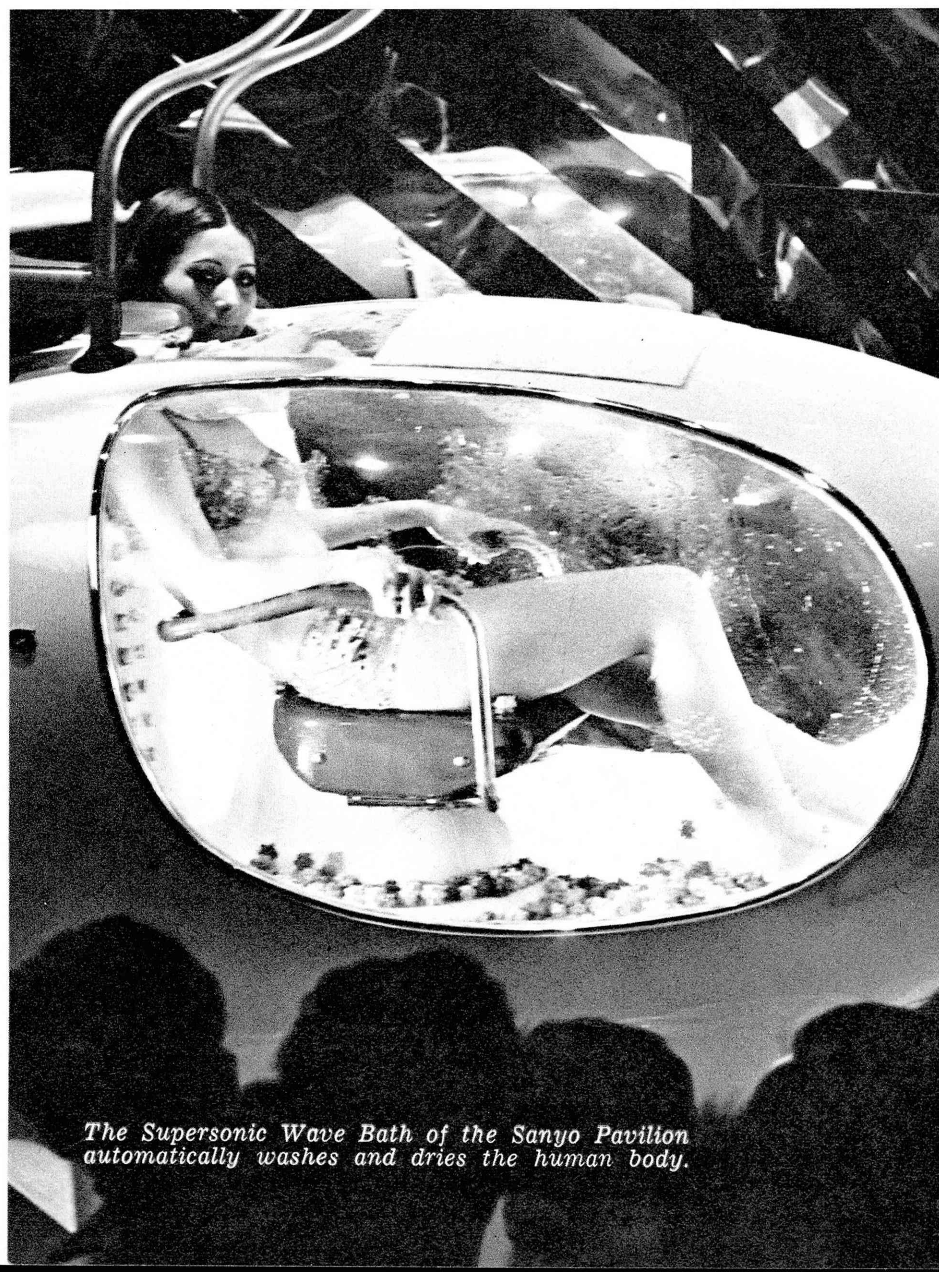
On display are the **home information center** complete with a TV telephone, a visual indicator, which is the terminal device of the computer, VTR (video tape recorder) and receiving apparatus for "radio wave newspapers;" a **"supersonic wave bath,"** which automatically washes and dries the human body and is also good for health; the "Flower Kitchen," where the housewife can prepare dishes simply by pressing buttons; and **capsule rooms for personal use**, complete with all necessary electronic devices. Visitors are free to actually use these rooms.

The future businessman will take full rest and sleep in the capsule room, eat in the "Flower Kitchen," and go to work in the home information center. In this center, he will discuss business matters by TV telephone, while various data required will be calculated by computer in an instant with the answer shown on the screen of the visual indicator. Of course, market analyses and business forecasts will be entrusted to the computer. The data obtained will be printed for filing, if necessary. If he is a manager, he can keep constant track of changing market trends and give instructions to his men by TV telephone, without leaving the room. And if he becomes tired, can take the "supersonic wave bath."

The display of the Sanyo Pavilion has "systematized" those machines and instruments which are already in a stage of practical application, technologically speaking. And they will probably become part of our daily life in the first half of the 1970's.

The Kitchen Capsule (left) and the Drawing Room Capsule (right) of the Takara Beautilion.





The Supersonic Wave Bath of the Sanyo Pavilion automatically washes and dries the human body.

Space Exhibits of the U.S. and USSR

Lastly, the space displays of the U.S. and the Soviet Union are the biggest topics among fairgoers.

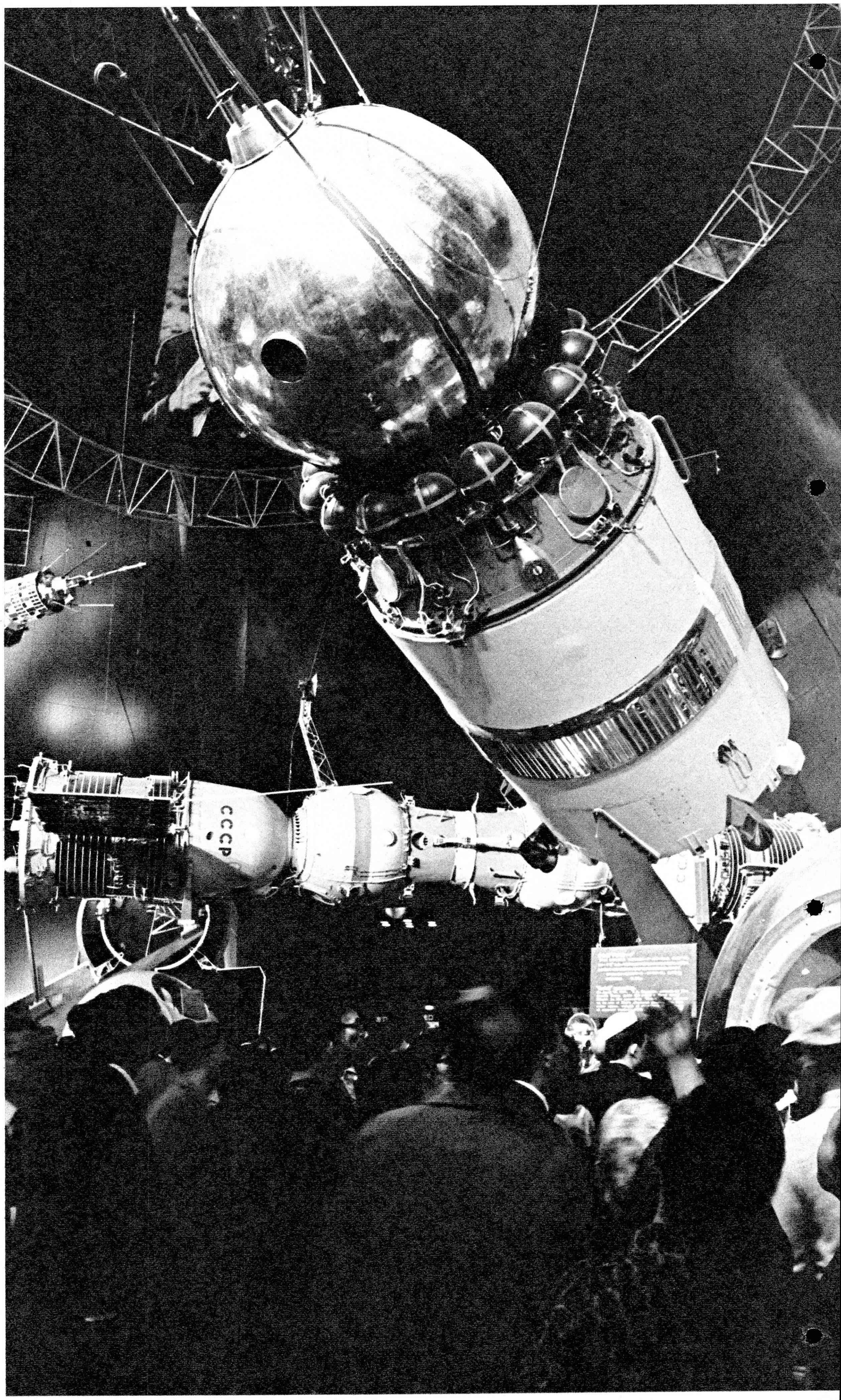
The U.S. Pavilion is a flat structure which resembles a "flying disc," which has landed on the ground. Inside this building, the biggest air dome structure in the world's history of architecture, the moon's "Sea of Tranquility," where man placed his "one small step," plus the landing module of the **Apollo 11** spaceship. The lunar sea is an exact replica made by the National Aeronautics and Space Administration (NASA) on the basis of what N. Armstrong, commander of the spaceship, actually saw and photographed on the lunar surface. It even bears the footprints of the astronauts, who landed on the moon. Also available are lunar rocks, the command module, spacesuits and space foods (all real things). The exhibits vividly reflect the American scientists' determined advance into the space age.



In the U.S. Pavilion, models of spaceship seats for American astronauts are displayed.

The Soviet Pavilion is the tallest and biggest structure at the EXPO '70 site, towering 107 meters high in stark contrast with the flat U.S. Pavilion. Laid out in the giant hall of the pavilion is a colorful display of Soviet space achievements—spaceships of the same type as **Soyuz 4 and 5** that made a successful docking in space for the first time, a model of the world's first artificial satellite, communications satellite, meteorological satellite, spacesuits, liquid-fuel propelling device, etc.

Visitors to EXPO '70 can see before their own eyes the spaceships and artificial satellites so far seen only in photos and TV screens. This makes them feel the arrival of the "space age" as sheer reality and they marvel at the unbounded possibilities of science and technology and the excellence of man's intellect.



Laid out in the Soviet Pavilion is a colorful display of Soviet space achievements.





Inside the U.S. Pavilion is the exact replica of the lunar sea and the landing module of the Apollo 11 spaceship.



Wild Birds' Paradise Protected
Three College Coeds Promote Preservation



Campaign

The three college coeds observe the life of wild birds on a grassy field of Shinhama, a paradise of birds in Tokyo Bay.

THE mere mention of three college coeds—or just three girls—promptly reminds bird fanciers in Tokyo of Sumiko Hasuo, junior of the Tokyo College of Agriculture and Industry, Yuri Kido, senior of the School of Literature, Waseda University, and Yuko Kitamoto, senior of the Japan Veterinary and Stock-Raising College.

Three years ago, a world-famed paradise of migratory birds at Shinhama at the mouth of the Edo River was being destroyed by bulldozers under a reclamation project amid the fast-progressing urbanization of the Metropolitan Region around Tokyo. When the three girls heard of this, they spread the watchword: "Let's Protect Shinhama!" Their voices reverberated and spread, finally leading to the establishment of a preserve in a corner of the river estuary.



Yuko Kitamoto

And now, the mammoth city Tokyo keeps growing and expanding. The habitats of wild birds, on the seashore or hills, are being ruthlessly crushed one after another by invading bulldozers. "Don't deprive our environment of Mother Nature any more!" With this motto, the three girls are energetically continuing their campaign to protect wild birds.

THE opposite bank was misty. The sea in spring was shining softly in the distance. A vast expanse of greyish brown mud with countless cracks spread before them. "Look carefully," the girls were told. Still they could see nothing. But when they concentrated their attention into the finders of binoculars, they noticed specks. The specks moved and turned out to be birds. The girls could see their bills and even notice their expressions. They found a different world on the tideland which at first looked like nothing more than an expanse of mud. There, the birds lived and moved about.

This happened when the girls, still high school students, who had joined the Japan Society for Wild Birds, were taken to Shinhama for the first time. And there, they experienced a fresh surprise. "Upon returning home, we found bulbuls noisily chirping in our gardens, though until then, we had not noticed them at all. We really felt then that we had now acquired new eyes to see a new world," they said.

Henceforward, though in the different years of different schools, the three girls, now enthralled by wild birds, became close friends. Each Sunday, they went out to the beaches and mountains. Even during painful studies for entrance examinations of colleges, the figures and merry chirpings of wild birds gave them great comfort. In particular, they went to Shinhama frequently.



Eastern Bar-Tailed Godwit

Shinhama, though only an hour's drive from the center of Tokyo, is a veritable "paradise of wild birds in Japan" both in quality and quantity. Or rather it used to be a paradise. In spring and autumn, snipe and plover, which shuttle between the Siberia-Alaska regions and Southeast Asia and Africa, rest their wings at Shinhama. In summer, coots and many other birds bring up their young here—their southernmost breeding place. In winter, large formations of ducks fly overhead, while black-headed gulls dance wildly over the sea. During the 10-year period from 1958, 216 species of birds (about half of those in Japan) were registered at Shinhama. When the area was most frequented by birds, as many as 15,000 of 89 species were confirmed in a single day.

However, wild birds were not the only things that the three girls saw at Shinhama. A wave of urban development had already invaded the area and large-scale reclamation work was going on to create factory sites and residential land. The paradise of wild birds was being destroyed before their very eyes.

"There was a nest of dusky mallards. When I found it, I noticed one egg. The next week, there were eight eggs in the nest. But when I went the following week, the place where I had found the nest was already under mud. The reclamation work had spread that far," wrote Hasuo with subdued indignation in an organ of the Japan Society for Wild Birds.

The three girls finally arose. In April 1967, they took the leadership in forming the "Society for the Protection of Shinhama" and launched a campaign to set up a preserve for wild birds. The campaign gradually spread through a signature-collecting drive, petitions to the Diet, publication of pamphlets, the holding of bird-watching parties, appeals to the general public through lecture meetings and movie shows, etc. Small fires kindled in the hearts of the three girls steadily developed into giant flames. And they were encouraged by the hearty cooperation and advice from the leaders and fellow members of the Japan Society for Wild Birds.

The girls, however, ran into firm opposition from local residents. "You can say anything you please as this is not your own land. You think of protecting birds, but you don't care a straw about the livelihood of the local residents. Which do you value—birds or human beings?," they often shouted to the girls. The local people themselves launched a signature-collecting drive and petitions to the Diet in a bid to promote local development and oppose the establishment of a preserve for wild birds. They were thus squarely pitted against the "Society for the Protection of Shinhama."

A heated controversy over which—development or nature preservation—should take precedence finally spilled over into mass communications media.

Nevertheless, the girls' pertinacious campaign paid off at long last. They managed to form a dialogue with the local residents for mutual understanding. And in March 1969, the Chiba Prefectural Government decided to retain a section of Shinhama, covering an



Sumiko Hasuo

area of 51 hectares, as a preserve with a budget of 900 million yen.

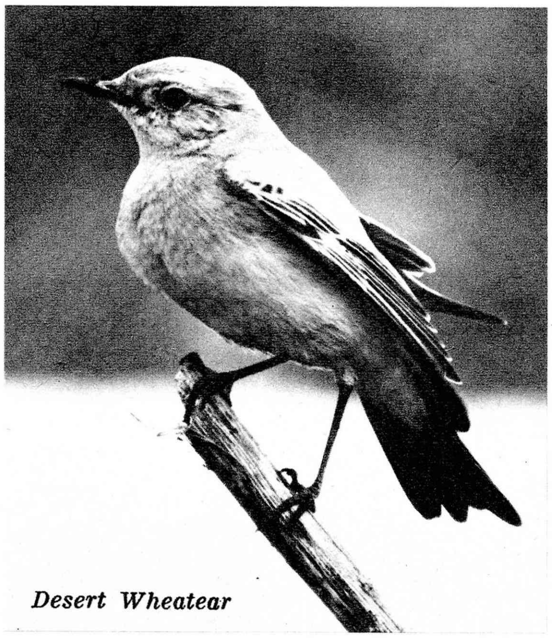
BEFORE one tries, one cannot say for sure whether one can accomplish a task or not. In the case of Shinhama, the three girls at first thought it might be impossible to preserve even a section of the area. As it turned out, however, a fire they kindled spread with great rapidity that even surprised them, and finally bore fruit. A whirlwind of intensive activities swiftly passed, and the moment of deep satisfaction that followed is already a thing of the past. But the experience has left a strong confidence in the three girls' hearts that even a thing which seems impossible at first glance can be done if one tries hard enough.

At present, the three girls are continuing their activities for wild birds with no letup. One of their important tasks is to compile basic data for the protection of wild birds—that is, a survey on the ecology and number of birds in Tokyo. Another is to implant the spirit of preserving wild birds in the hearts of as many people as possible. The girls' leisure time is for the most part devoted to the campaign for the protection of wild birds. Let us look into their recent diary:

April 21 (Tue.)—Engaged in editing the organ at the office of the Society for Wild Birds in Shibuya, Tokyo, from 6 p.m. Hasuo and Kitamoto took part. Kido absent because of exams at her college.

April 26 (Sun.)—Conducted "count" (that is, counting of wild birds) at the reclaimed land "Yume-no-shima" in Tokyo Bay from 8:30 a.m. Only Hasuo took part. Drenched to the skin because of rain.

May 2 (Sat.)—Hasuo, Kido conducted a preliminary survey at the Meiji Shrine from 2 to 6 p.m. for a children's bird-watching party to be sponsored there on May 5 or the Children's Day by the Society for Wild Birds. Confirmed more than 10 species of birds, such as green pheasant, meadow bunting and bamboo pheasant.



Desert Wheatear

May 5 (Tue.)—On the occasion of Children's Day today, a bird-watching party for children was held at the Meiji Shrine from 8 a.m. It was a big success, favored by fine weather. 30 children took part. Hasuo and Kido served as attendants.

May 7 (Thur.)—Consultation held at the office of the Society for Wild Birds from 7 p.m. to discuss measures against use of fowling nets. Hasuo participated.

May 10 (Sun.)—In the morning, engaged in "count" at the Kasai reclaimed land in Tokyo Bay. All of the three—Kitamoto, Hasuo and Kido—worked together after a long interval. Coots playing in a reed pond, graciously flying little terns, etc.—numerous birds were counted. But reclamation work is making steady progress, and this field of reeds and beach will also be gone very soon. This thought deeply pained our hearts. Bird Week started today, but is it really heeded? In the afternoon, conducted a signature-collecting campaign against fowling nets in front of Shibuya Station along with fellow members of the Society for Wild Birds.

THE profound impression formed when they first went for a bird-watching party while at high schools, and the strong self-confidence acquired through the campaign for the preservation of Shinhama—these still form a major propelling force for the three girls' energetic activities for the sake of wild birds. And it may be said that their life has been orientated by their contacts with birds.

Hasuo majors in forestry at her college upon graduation, she wants to obtain a job connected with the preservation of nature. Kitamoto will graduate next March and become a veterinarian. Her dream is to open a hospital for birds. Kido will also graduate next March. She has not yet decided what to do after that, but she has chosen the works of Arthur Ransome, a British writer of juvenile stories, as the subject for her graduation thesis. The reason is that many birds appear in his works.

Hasuo married this spring. Her husband Yoshitake Hasuo is a staff researcher of the Yamashina Ornithological Research Institute. This was a romance generated by their common love for wild birds.



Yuri Kido



A major objective of the three coeds' activities is to implant the spirit of protecting wild birds in the hearts of as many people as possible. The above and right photos are snaps of a "children's bird-watching party" held on May 5th at the Meiji Jingu Shrine in Tokyo with the three girls playing a principal role.















Photographed by Masamichi Sumiyoshi, Yasuo Hatano and Hitoshi Fujimura.



The three girls appeal "not to deprive our environment of Mother Nature any more" has produced unexpectedly widespread reverberations. In Tokyo, however, many bulldozers and sand pipes are still operating with a deafening roar, destroying nature without letup. "Without Mother Nature, not a single human being could hope to live. And we don't think this would change in the future. The preservation of nature is after all for the benefit of mankind. It's quite a pity that an awareness of this has not yet taken extensive root among the general public," said the three coeds.



JAPANESE BAMBOO

PHOTOGRAPHED BY SHINJI TAKAMA



Bamboos grow in many parts of the Orient, but especially in Japan. A landscape with a bamboo grove is typically Japanese, and it is not too much to say that the beauty of Japan is represented by the bamboo.



AN old tale every Japanese hear in childhood is the story of "Kaguya-hime" (Shining Damsel) born of a bamboo. This "Taketori-Monogatari" (Tale of the Bamboo-Cutter) is Japan's oldest narrative handed down since presumably produced about 900 years ago.

Once upon a time, there was a "Taketori-no-Okina" (an old bamboo-cutter) whose job it was to make various articles of daily use from bamboo. One day, he found a bamboo the lower portion of which was shining. Puzzled, he cut it and discovered a charming little girl only about 10 centimeters tall seated in a joint. It was she who was shining and so he named her Kaguya-hime (Shining Damsel) and brought her up as his daughter. Thereafter, whenever he went to cut bamboos, he invariably came across one containing gold in a joint and soon he became a wealthy man. In the meantime, the pretty Kaguya-hime grew to womanhood in the short span of only three months. She became a noble, pure-hearted, beautiful maiden. Soon the Emperor and many others, attracted by her charm, asked for her hand, but she would not consent. Then one year, on the night of August 15 when the moon was full she went to heaven in a flying chariot. It thus turned out that Kaguya-hime was not a human being, but a heavenly woman, who had been banished to the world for a time for having committed some sin.

Not only did the bamboo thus feature in an ancient tale, but has been inalienably related to the Japanese people's life from olden times.

The bamboo has been indispensable as material for housing and cooking from ancient times. For instance, it was used to make latticework for ground plastering of the walls of the Horyuji Temple, built early in the seventh century and preserved to this day. It was also used to make such weapons as bows and arrows as well as musical instruments

Continued on next page

Left: Bamboo grove at Otokuni, Kyoto.

shakuhachi (thick flute) and *fue* (slender flute), tea-utensils and flower-vases. A fishing-rod, carved *shakuhachi*, and brush, all made of bamboo in the Tempyo Period, are still retained and valued as ancient treasures. Such bamboo utensils were therefore already used in Japan around 750 A.D.

Although the times have changed, the various uses of bamboos have not. Recently, "bamboo paper" and "bamboo rayon" have started to be manufactured, bringing bamboos still closer to the people's daily life not merely in housing and cooking, but also clothing.

THE beauty of the bamboo grove has generated and fostered an esthetic sense of "tranquility" deep in the recesses of the Japanese people's—or rather, the Oriental—minds.

And this beauty can be fully appreciated at the present Japan World Exposition, Osaka (EXPO '70). The Matsushita Pavilion, one of the structures built by one of Japan's industrial giants at the fairground, is situated in a pond surrounded by a grove of 10,000 *moso-chiku* bamboos (Phyllostanchys mitis). The thicket not only serves as a shield against the outside world of noise, but has also the mysterious effect of drawing the visitor, who walks a quiet lane in a grove, into a world of Oriental meditation.

The bamboo is distributed mainly in the tropical and subtropical zones, comprising nearly 700 species as classified into about 40 genera. It grows in profusion in the monsoon areas of tropical Asia. In Japan blessed with rain all the year round, there are about 660 species of bamboo of 13 genera.

As for most of the bamboos in Japan, subterranean roots grow from early summer to late autumn. From autumn to the spring of the following year, the roots put forth sprouts, which appears as *take-no-ko* (bamboo shoots) above the ground and grow to be full-length trees. In this way, subterranean roots and stems above the ground grow alternately throughout the year. The roots spread like a network and put forth sprouts here and there. Therefore, although each bamboo in a thicket appears independent, it is actually part of a large family of brothers and sisters born of the same underground roots.

Old farm houses surrounded by a bamboo grove are familiar sight in Japan's rural areas. Bamboos are preferred because their ramified underground roots spreading like a network prevent an earthquake or typhoon from causing cracks in the ground. Moreover, bamboos are planted for riparian protection, since their subterranean roots prevent embankments from giving way under the pressure of a swollen river in case of downpours. Two decades and a half ago, atomic bombs exploded in this country, crushing everything and playing havoc with all living things—not merely human beings, but animals and plants. But *moso-chiku* bamboos withstood the destructive explosions valiantly and sturdily. Even near the sites of the explosion, they survived though one side of their stems was burned. So bamboos are not only beautiful, but also possess amazing strength.

BAMBOO groves in Japan cover an area of about 200,000 hectares, 40 per cent being situated in the Kyushu region. *Madake* bamboos (Phillostachys bambusoides) account for 70 per cent, followed by *moso-chiku* (about 20 per cent) and others (10 per cent). Incidentally, very small bamboos called *sasa* (bamboo grass) grow profusely in cold areas, covering a total area of three million hectares. Mountainous areas of Hokkaido, Japan's northernmost land mass, are covered with this grass.

Unlike ordinary trees, such as pines and cedars, bamboos—even those growing in the temperate zone—have no "annual rings" in their stems. The bamboo stem is hollow like a pipe and has many joints. A tall bamboo has as many as about 70 joints. That is why bamboos, even when bent down by strong wind or heavy snow, seldom break. During the winter, bamboos in snowy areas bend down under the heavy weight of snow and the tips of their branches even touch the ground. But they manage to withstand such pressures. As spring comes round and a thaw sets in, the bamboos again rise straight up—even higher than before. In this, we see one of nature's wonders. We are impressed by the beauty of bamboos supported by both flexibility and strength, and feel as if the life of a bamboo is a reflection of man's life.

In this country, the bamboo has been one of three key elements for decorations for marking the New Year since the Muromachi Period (1392-1573), the others being pine and plum trees. Pine trees are evergreen and their verdure all the year round exudes a noble atmosphere. And they grow stoutly even on barren land. Therefore, their vigor and strong viability are considered fit for auspicious occasions. Plum trees put forth pretty flowers



Left: Flower of bamboos. Bamboos seldom put forth flowers. After about 120 years, bamboos blossom and fructify, and then die.

in spring before any other plants. Not only are their flowers appreciated, but their fruit contributes largely to man's life as food and medicine. As for bamboos, the obvious reason they are used as an auspicious decoration is that they have joints. That is, the New Year is considered a new joint in man's life, reflecting the Japanese people's hope to continue growing and prospering steadily by entering a new stage with each year.

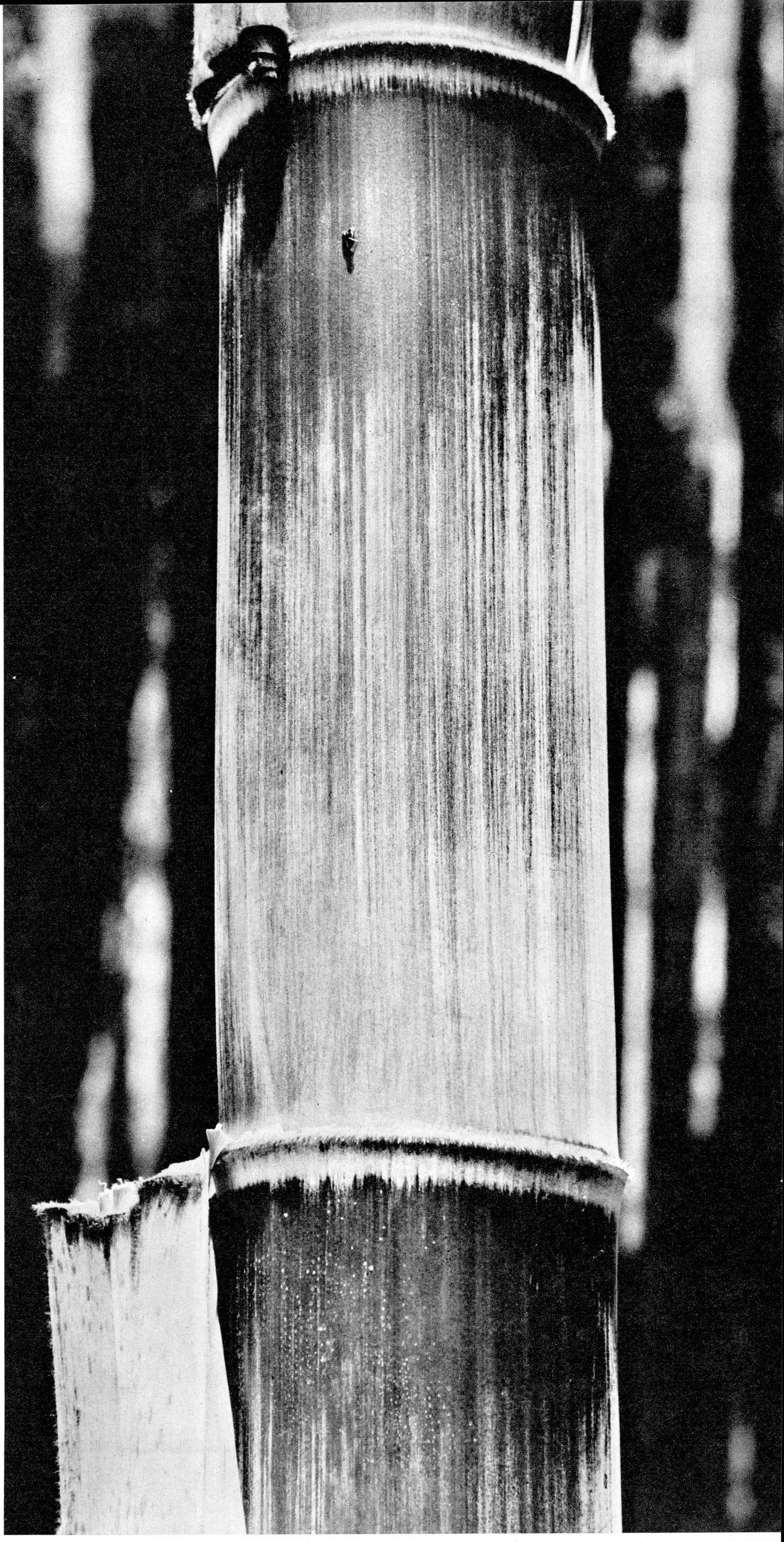
The brightly verdant young bamboos strike us as fresh and naive. Moreover, bamboos have not only an attractive figure, but also various characters that are associated with human virtues—to wit, great perseverance to withstand heavy snow, a pliable character as shown by straight growth, sturdiness of subterranean roots firmly spreading in the ground and great vigor to grow. That is why they are so well loved by the Japanese.

When sprouts put forth by underground roots appear on the ground, they are called *take-no-ko* (child of bamboo). Bamboo shoots up to about 10 days after birth are used for food. They appear during a rainy period in the early part of spring. And within two months, they are fully-grown. During this short period, they complete their "physique" for the rest of their life. After that, however long they may live, and however much fertilizer may be given, bamboos never grow fat. This is true of all species of bamboos, both thick and thin.

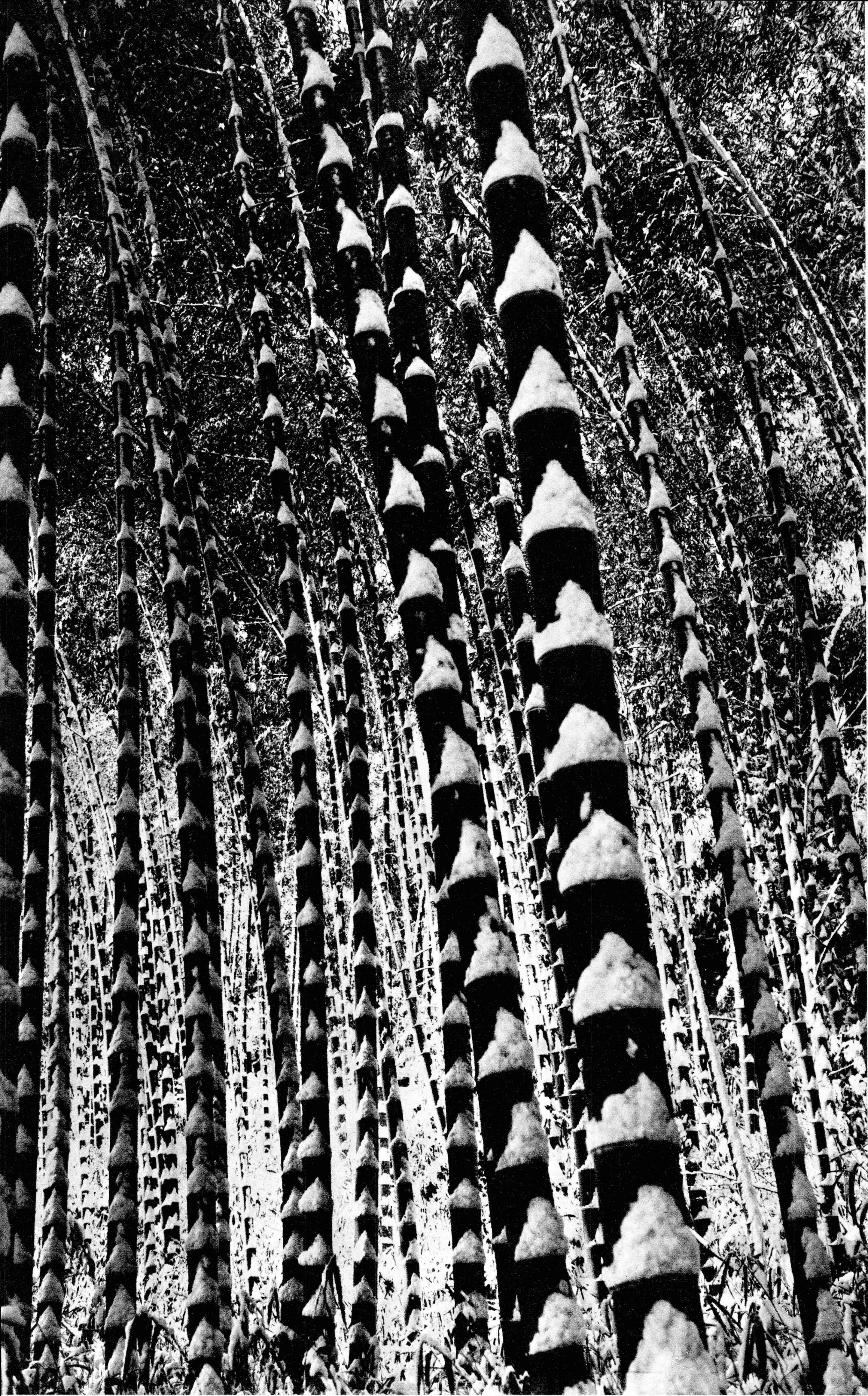
The "Taketori-Monogatari," as referred to at the outset, says "Kaguya-hime" grew to full womanhood in only three months. This is very interesting, considering the speedy growth of bamboos.

When you visit a bamboo grove from early to full summer, you can directly observe the wonderful growth of young bamboos beside the parent bamboos at a daily pace of as much as one meter. Such speedy growth cannot be seen among other plants.

The "Taketori-Monogatari" also tells us that the old bamboo-cutter found many gold-filled bamboos and became wealthy. This seems symbolic of the unlimited viability of the bamboo. That is, the tips of subterranean roots or sprouts near the ends extend to make new roots. Thus the roots branch out and spread year after year. Meanwhile, part of the sprouts put forth by the roots appear on the ground and grow to full-length bamboos. These processes both under and above the ground are repeated endlessly. So the old narrative apparently linked this with man's hope for boundless prosperity.



Right: Joints of a bamboo. Hanging from the lower joint is a skin which protected the bamboo when it was soft shoot.



Left: During the night, snow attached a white triangle to each joint of the tens of thousands of bamboo stems. Right: Bamboo grove in June.

Pages 32-33: Bamboo shoots above the ground are called "take-no-ko" (child of bamboos) and become full-grown in about three months. Young bamboos, which have grown in the year are called "shin-sei-dake (newborn bamboos).











In the midst of "parent bamboos," which are more than one year old, "young bamboos" which sprouted this spring are growing straight upward.



Above: Some bamboos have unique colors. The bamboos shown in the photo are called "kuro-chiku" (black bamboo) on account of their black stems.

Right: "Konnen-dake" (this year's bamboos), standing stoutly, strike us as fresh and remind us of the youth resolutely resisting the turbid world.

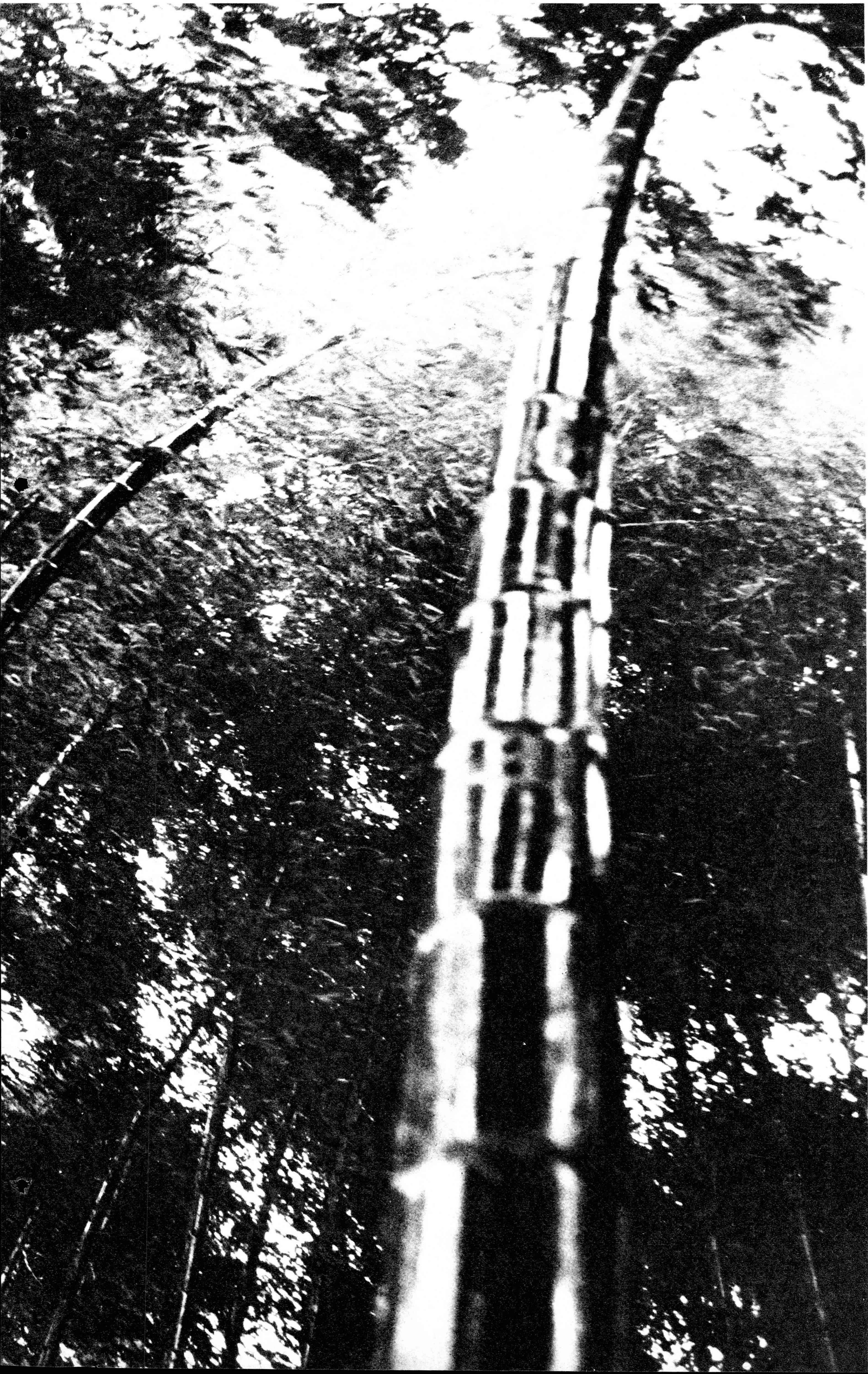




Bamboo grove in a storm.







Faced with a typhoon, the bamboo grove as a whole become furious, and bamboo leaves roar, registing the raging wind.

BAMBOO ARTIST: SHOKANSAI IIZUKA

This artist uses bamboo as a medium for the expression of beauty. Mr. Shokansai Iizuka, we introduce here, is a foremost master in the traditional art of bamboo craftsmanship. His works, known for their high artistic value, represent the quintessence of this time-honored craftsmanship and vividly embody a unique sense of beauty which the Japanese have entertained toward bamboo from time immemorial.

Mr. Iizuka was born in Tokyo in 1918. His father, Rokansai Iizuka was the most renowned bamboo artist of those days, while his grandfather Hosai Iizuka had contributed greatly to elevating bamboo works from mere daily utensils to works of art. And so Shokansai Iizuka was born into an ideal environment to become a bamboo artist, although at first, he had no such aspirations.

From his childhood, he liked to draw more than anything else. He still remembers that while at primary school, he proudly wrote in a composition: "I will become a painter and draw pictures for all people." This aspiration grew with the passage of time. In 1942, he finished the Western painting course of the Tokyo Fine Arts School (which has produced most of Japan's noted painters), and started to become a professional. About that time, however, he was suddenly confronted with quite the unexpected death of his elder brother who had been training to become a bamboo artist by inheriting his father's traditional craftsmanship.

So his brother's passing resulted in shunting Shokansai from the path of painter to that of bamboo artist. Because of the environment in which he grew up, he had profound understanding of bamboo craftsmanship. Moreover, he keenly felt a sense of mission in the belief that the traditional techniques of the Iizuka family must be handed down to posterity. Therefore, he gave up the palette and brush with good grace, and decided to study bamboo craftsmanship under his father, Rokansai.

As with all other traditional crafts, a trainee must spend many years apprenticeship to learn the fundamental techniques of craftsmanship before becoming able to create his own work. It is necessary to know the characteristics of various kinds of bamboo, the material for this craft, and to acquire a discerning eye for selection of the most appropriate material. Bamboo craftsmanship puts particular accent on the beauty inherent in the material, and this makes the knowledge of it particularly important. Next, it is essential to learn the techniques of splitting bamboo into desired thicknesses and shapes and weaving bamboo pieces into the intended pattern and form. This is said to take at least 10 years.

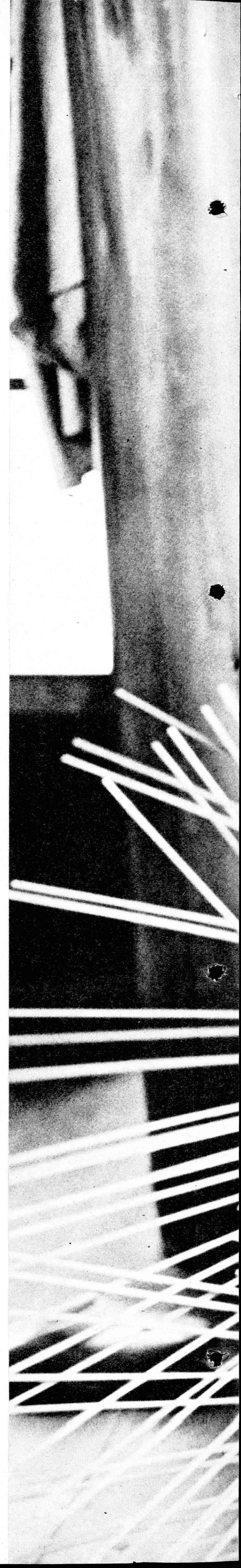
Shokansai received rigorous training from his father, Rokansai regarding basic techniques and knowledge. At first when he painstakingly completed a work and showed it to his father, the latter often trampled it down without saying a word or even burned it. An old-type craftsman, his father seldom taught with words. He trained his son by his attitude and through tacit mental communion.

Moreover, Shokansai experienced mental agony over the difference between the craft and the painting. He had long studied painting with the belief in "art for art's sake." He wondered, therefore, if the bamboo craft, bound by functional purposes, could attain a high level as an art.

Nevertheless, after years of rigorous training such agony and doubt vanished when he finally acquired the techniques of freely fashioning bamboo into whatever form he pleased. He then realized that bamboo had a limitless charm as material for the expression of his artistic wishes.

In 1954, Shokansai won the first prize in the craftsmanship division of the "Nitten" (Japan Art Exhibition), the most authoritative art contest in the country, establishing himself as foremost bamboo artist. Since then he has created many bamboo wares under the motto of presenting "works that not only fill functional needs completely but also fully qualify for artistic appreciation alone."

At the age of 52, Shokansai is still young in the world of traditional crafts. But he is already recognized as representing Japan's bamboo craftsmanship of today, and his works have won high acclaim at exhibitions both at home and abroad. Furthermore, he went to Taiwan to teach his craft and is also playing an active part in its development.



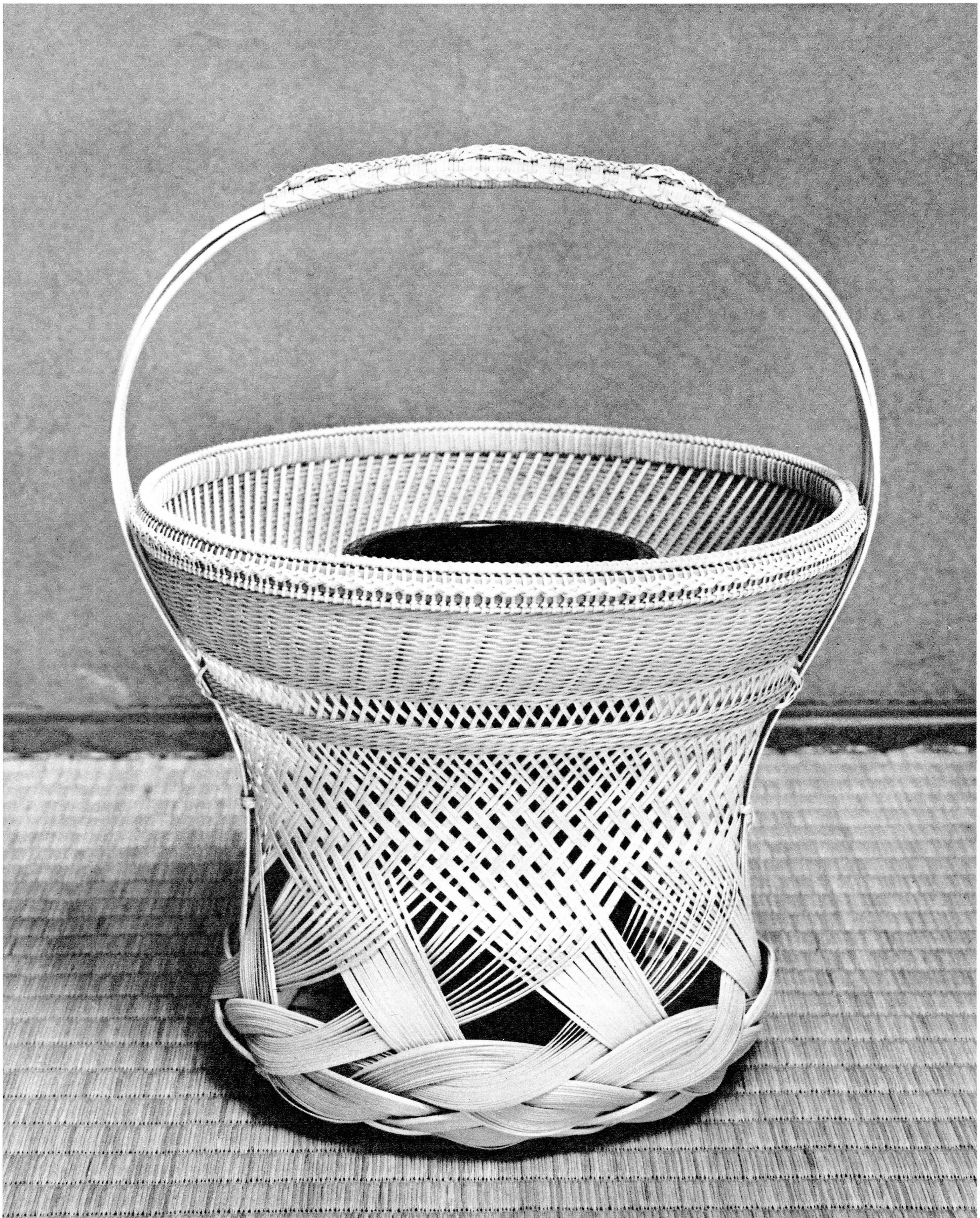
Shokansai Iizuka works in his home. Here he turns out one masterpiece after another. The flower vessel he is now weaving will take three months to complete.

Photographed by MICHIO NOGUCHI



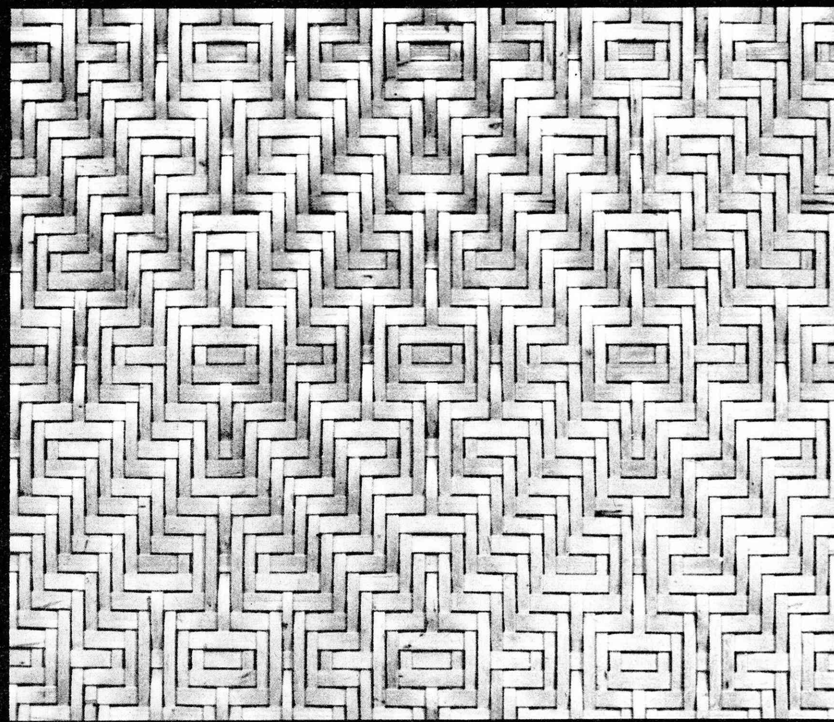


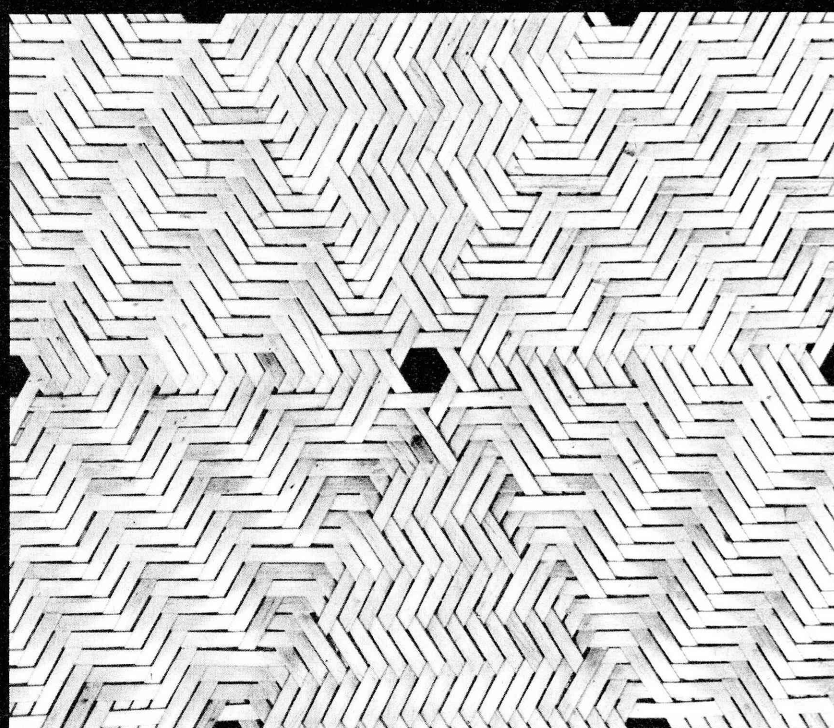
Master bamboo artist st[illegible] his work

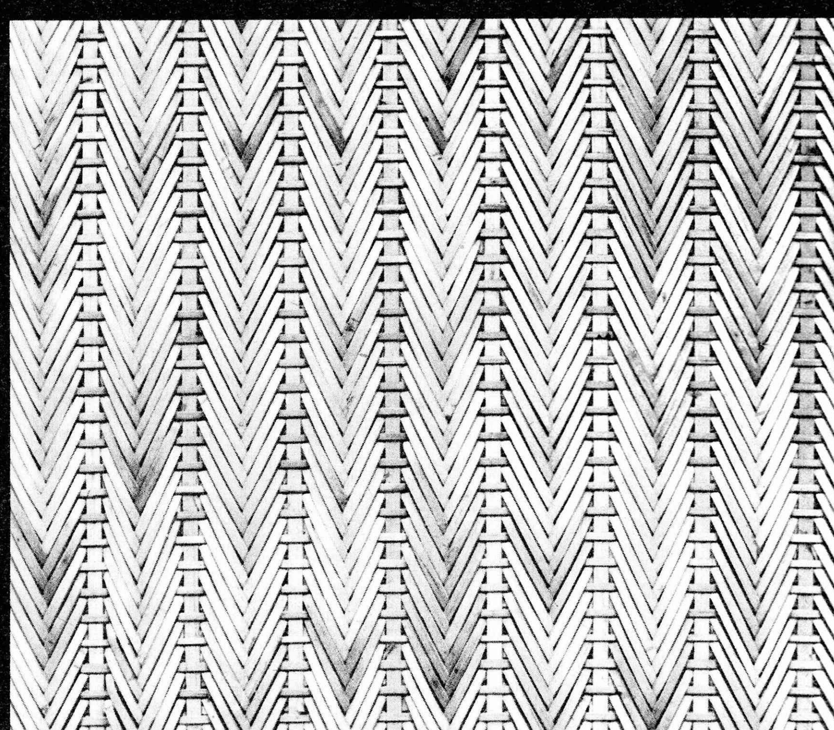


Shokansai's representative work "Vessel for Flower Arrangement" (30 centimeters high).

BEAUTY OF BAMBOO WORKS







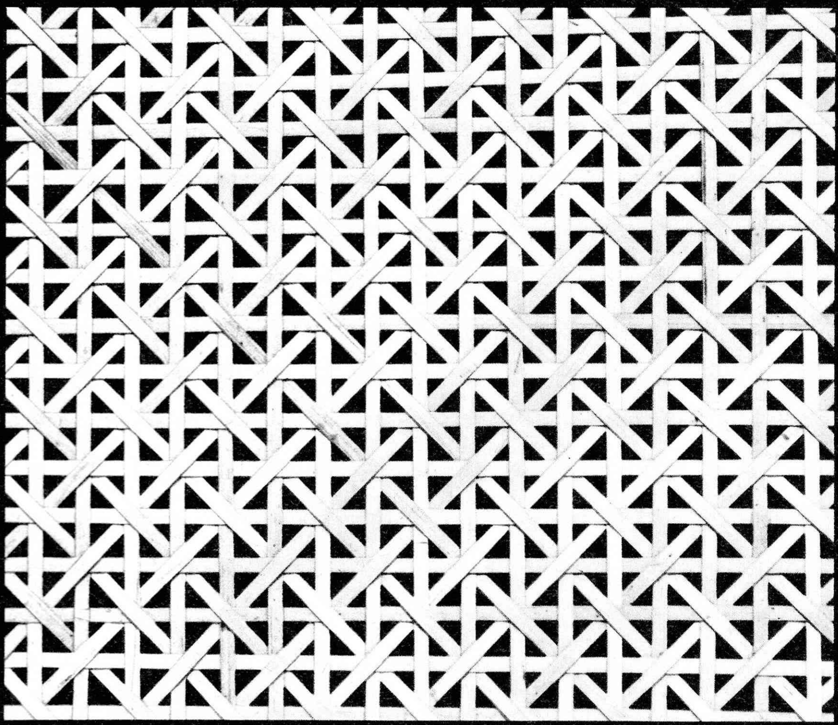
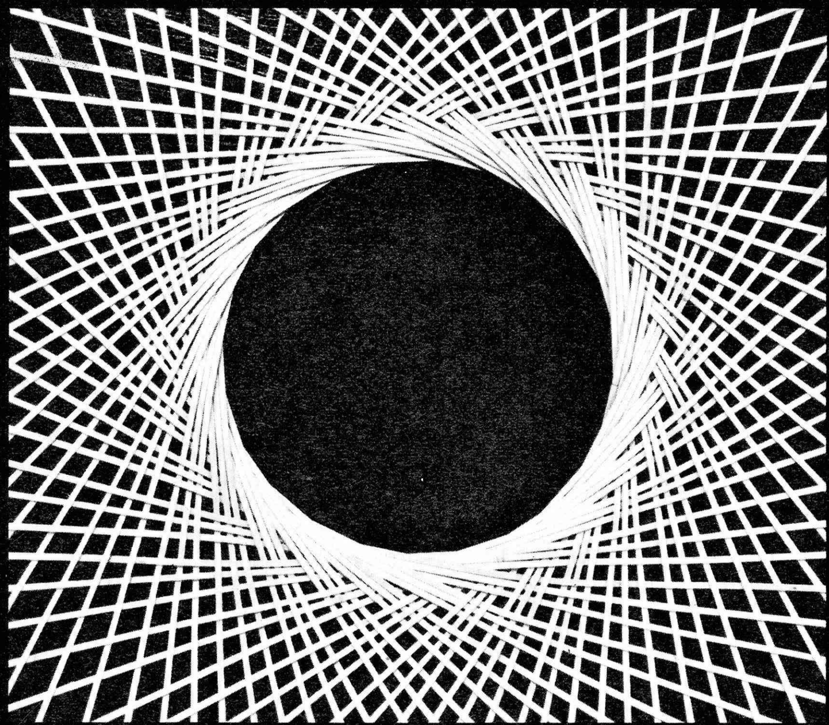
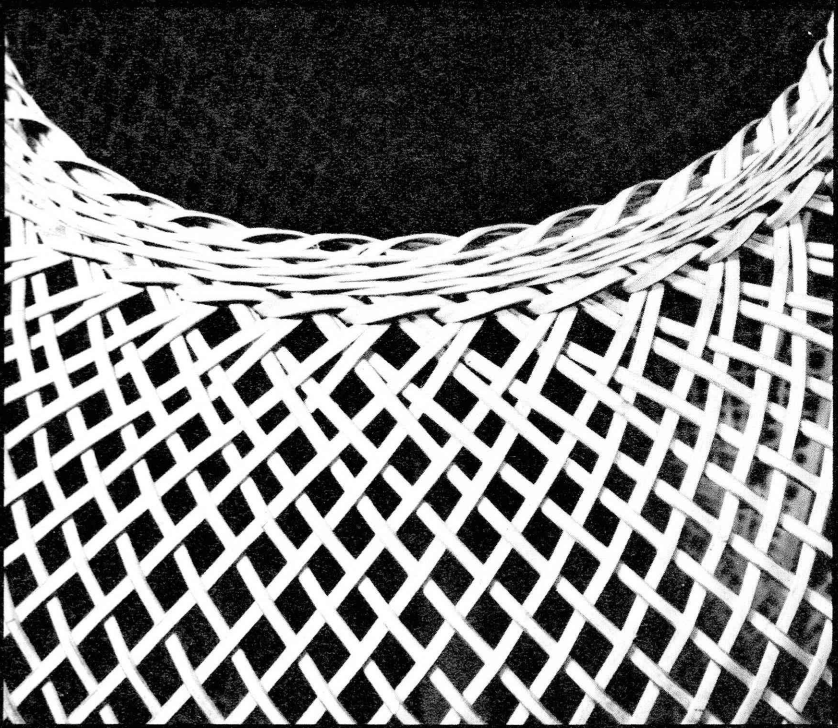
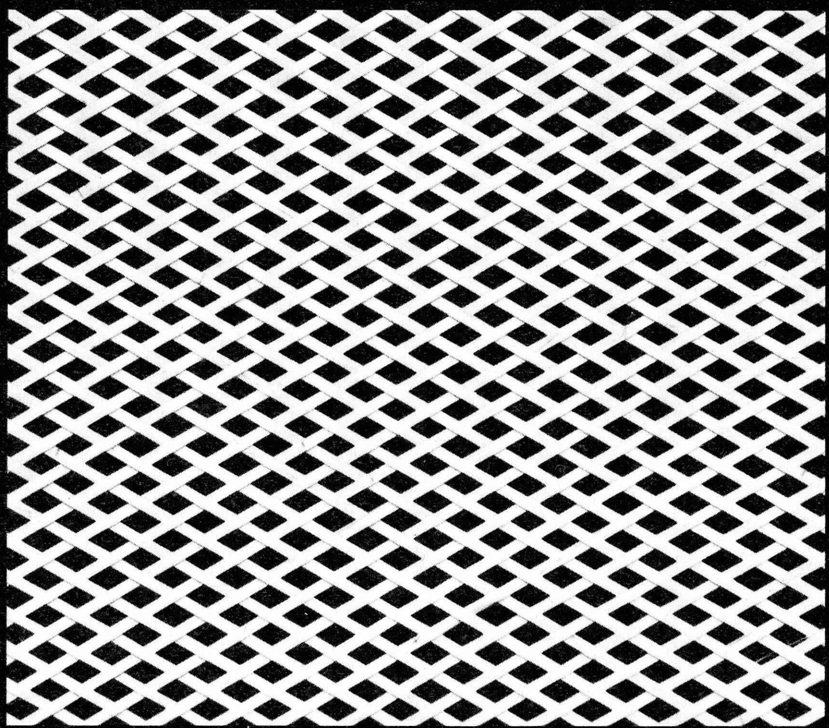
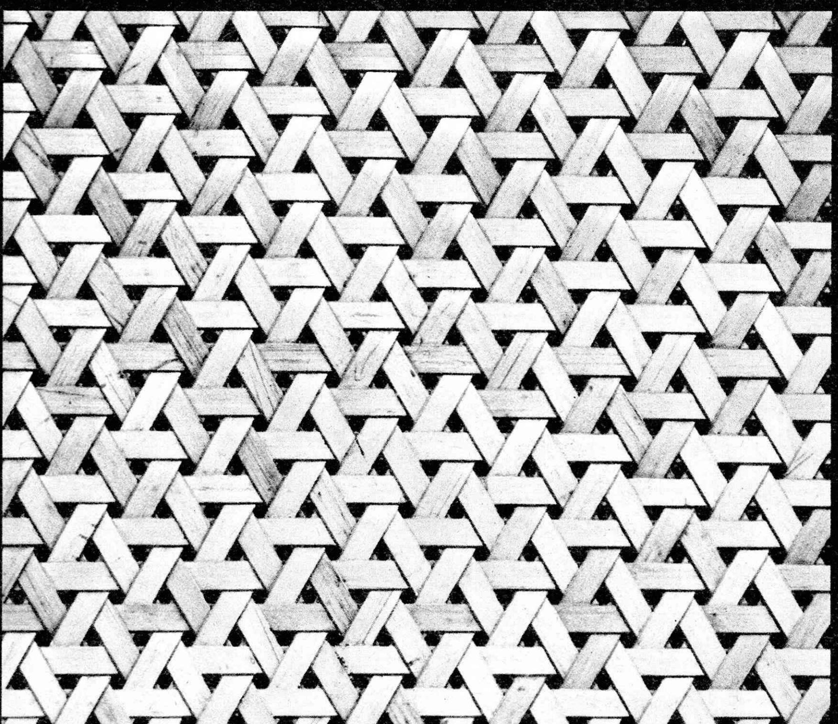
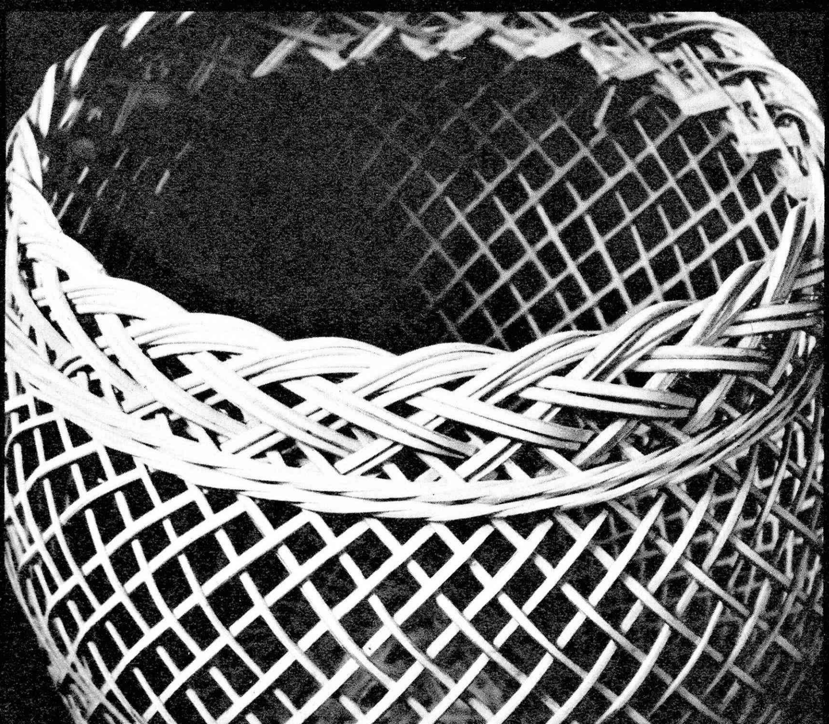
Bamboo groves provide much scenic charm, and bamboo wares a key element in Japanese arts and crafts.

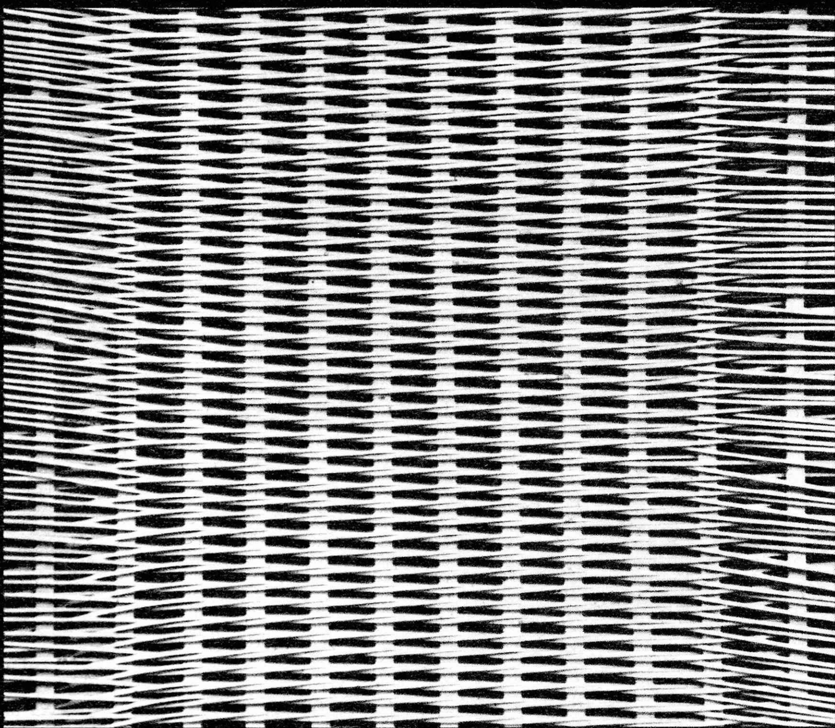
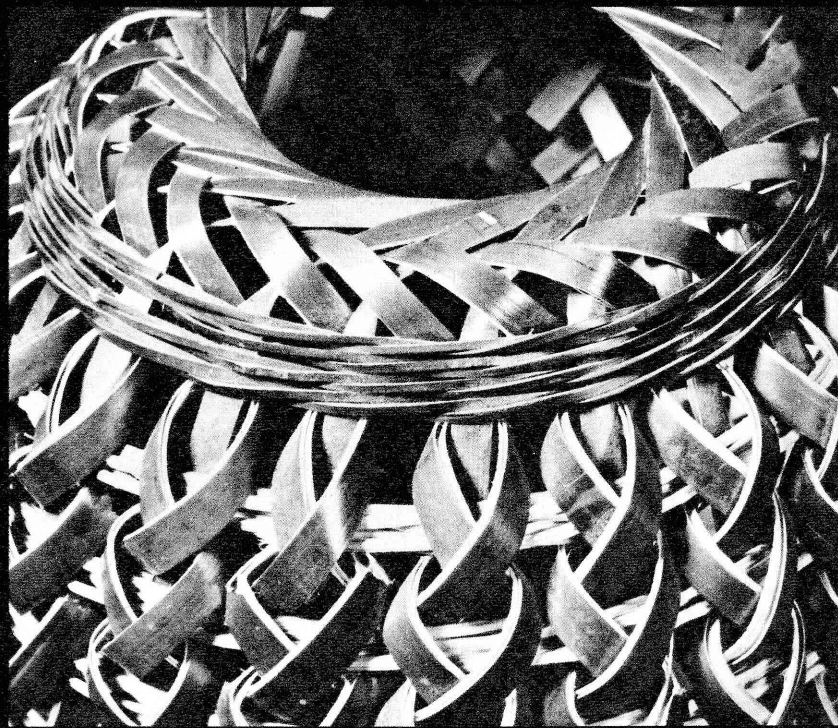
Production of bamboo wares is naturally not confined to Japan alone. The bamboo also grows in China and other Asian countries, where various bamboo wares are made. However, these of Japan boast a unique beauty that distinguishes them from these bamboo wares of other countries.

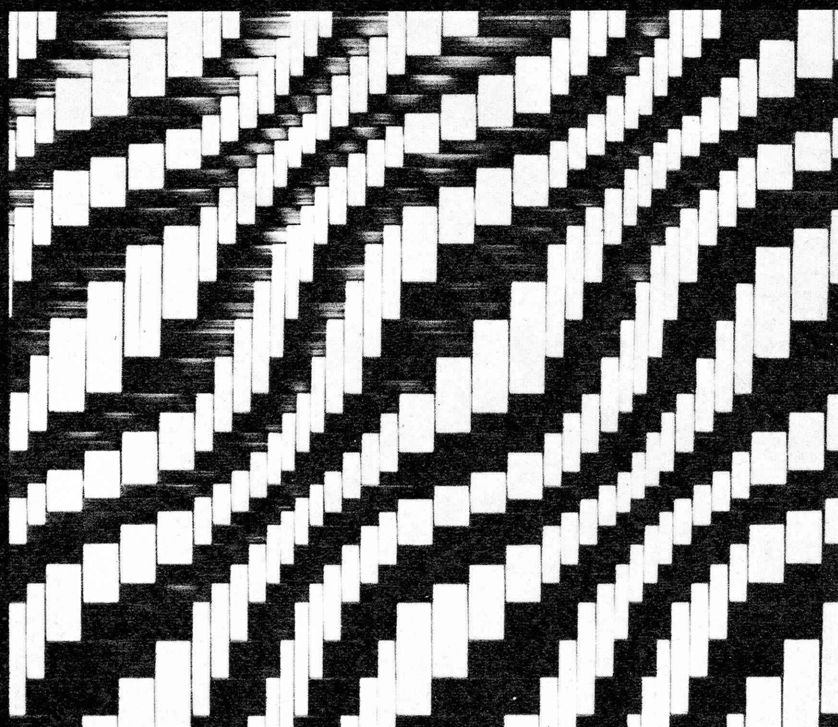
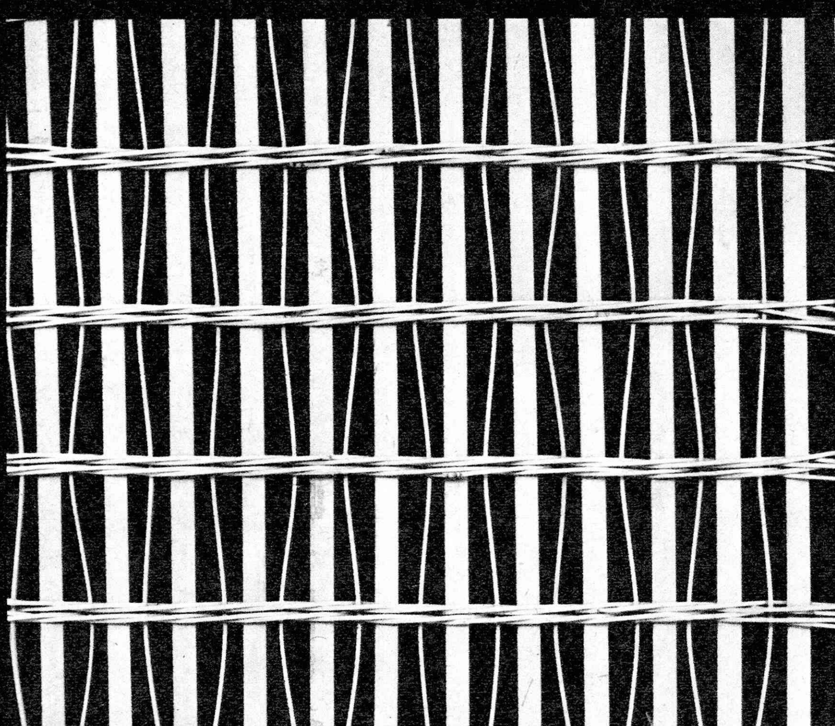
The prime characteristic of Japanese bamboo ware is that the natural beauty of the bamboo is retained and given full play. These wares are made primarily by weaving slivers, obtained by splitting bamboo stems, or using the stems whole. In either case, what is essentially important is to cut and fashion the bamboo in a way that does not harm its inherent nature and even develops it further. Bamboo material is sometimes colored, but this is nothing more than a means of accentuating its natural charm.

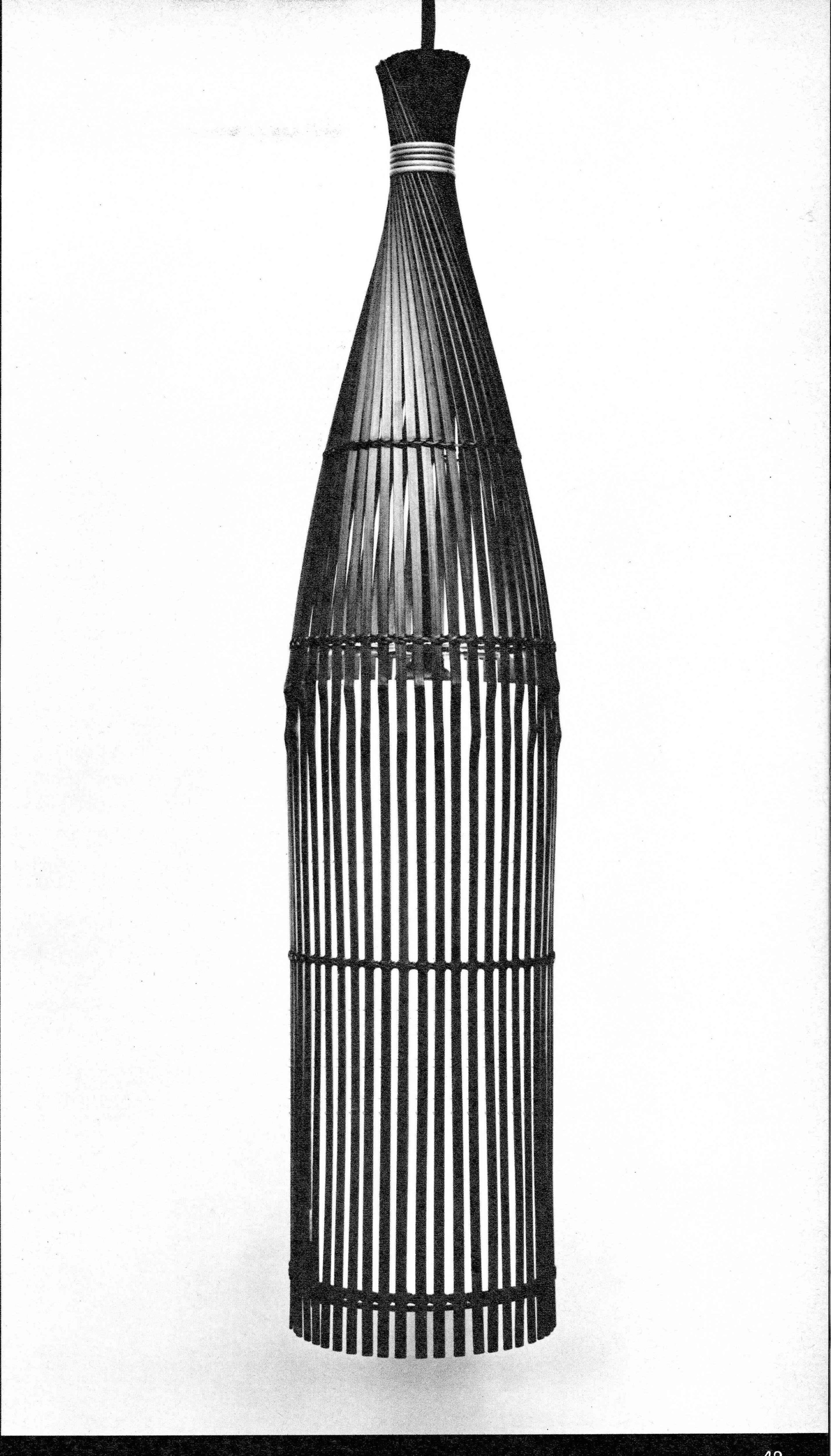
The bamboo grows in all parts of Japan with the sole exception of Hokkaido, the northernmost main island, and bamboo wares have been produced in many parts of the country since ancient times. But whenever we see bamboo ware, we cannot but be deeply impressed by the high standards of techniques as well as the exquisite sense of design. Even today, these wares form an important element in every aspect of the people's daily life—for instance, as kitchen utensils, such as large and small baskets, and trays; flower vases and other ornamental items; and various utensils for the tea ceremony. And they give a heartwarming, artistic touch to the present-day living environment filled with mechanized, mass-produced and overly-stylized furnishings and utensils.

Bamboo wares are made primarily by weaving slender bamboo pieces obtained through splitting the stem. Introduced here are only several of the many bamboo weaving methods handed down in various parts of Japan from time immemorial. We cannot but be surprised at the large variety of weaving patterns and their variegated richness of beauty. They form time-honored patterns, but never strike us as being old.

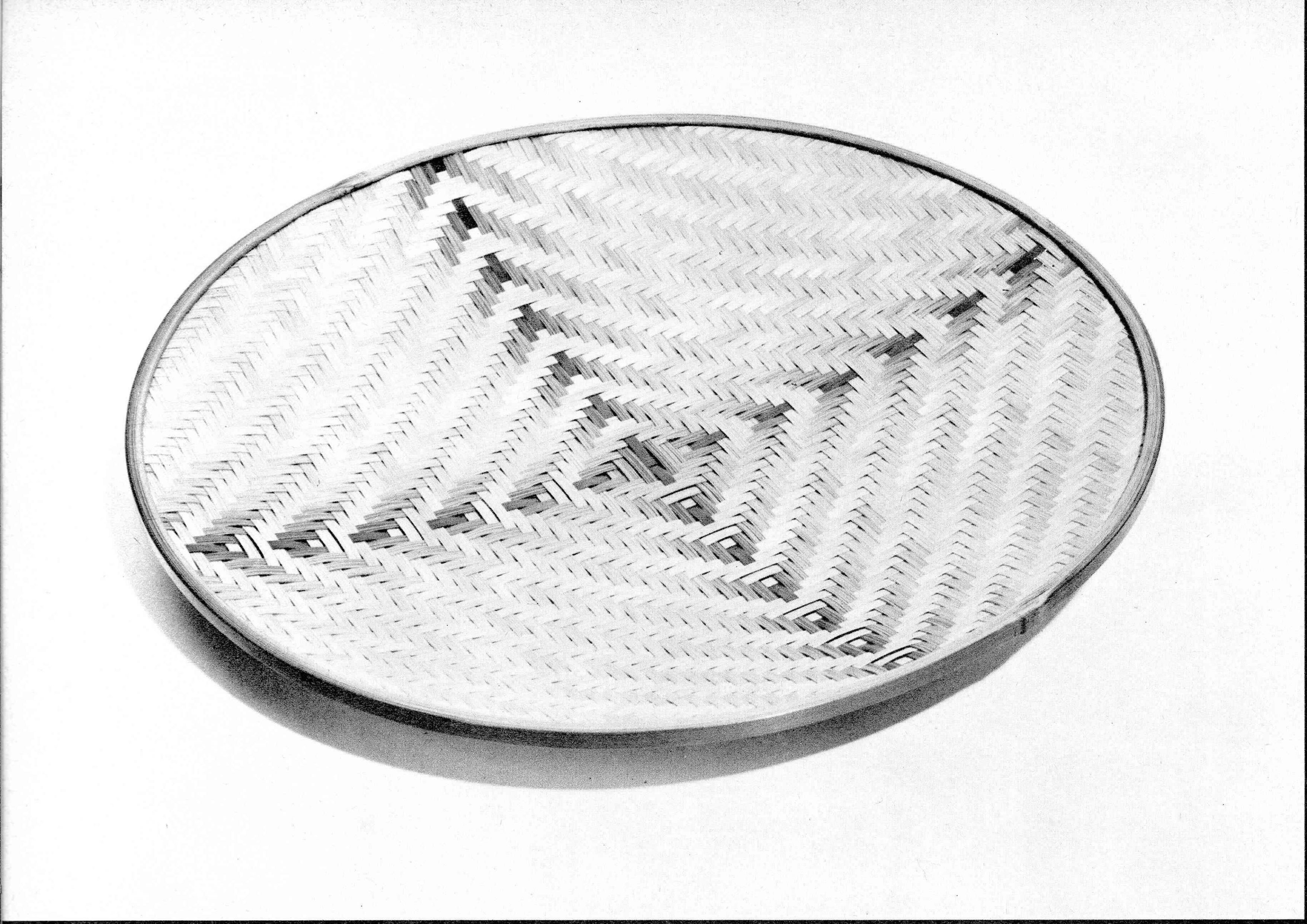







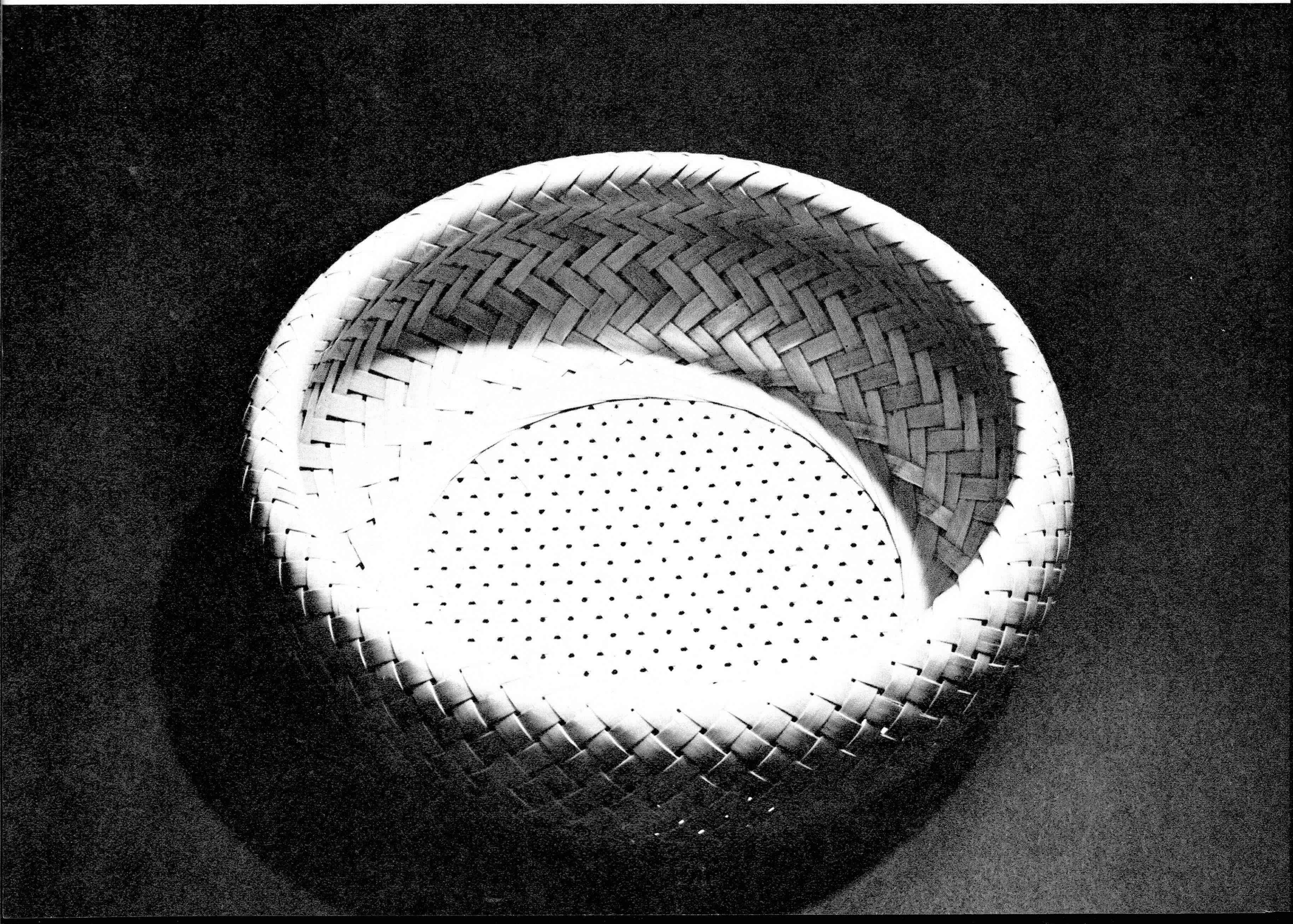



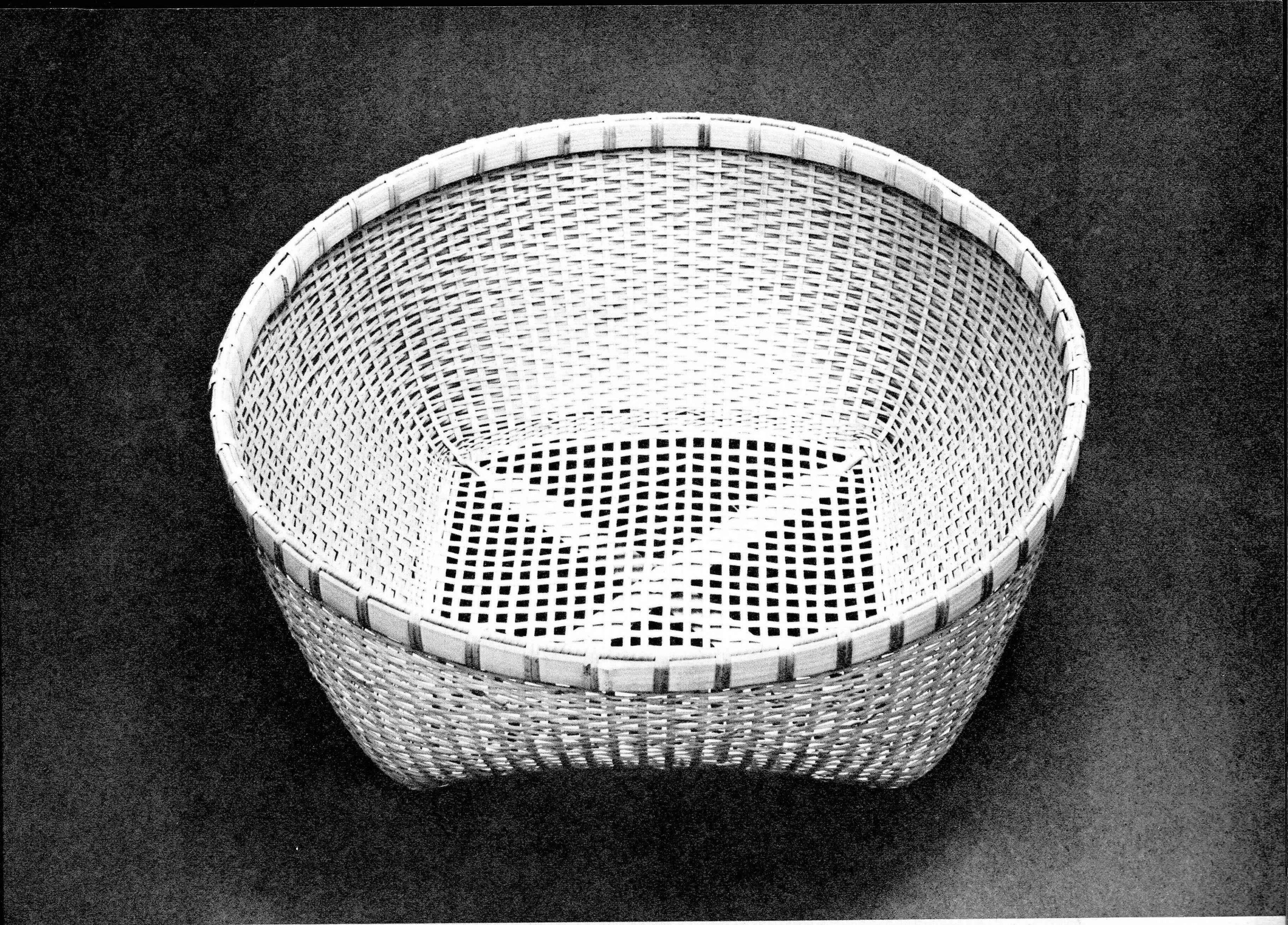



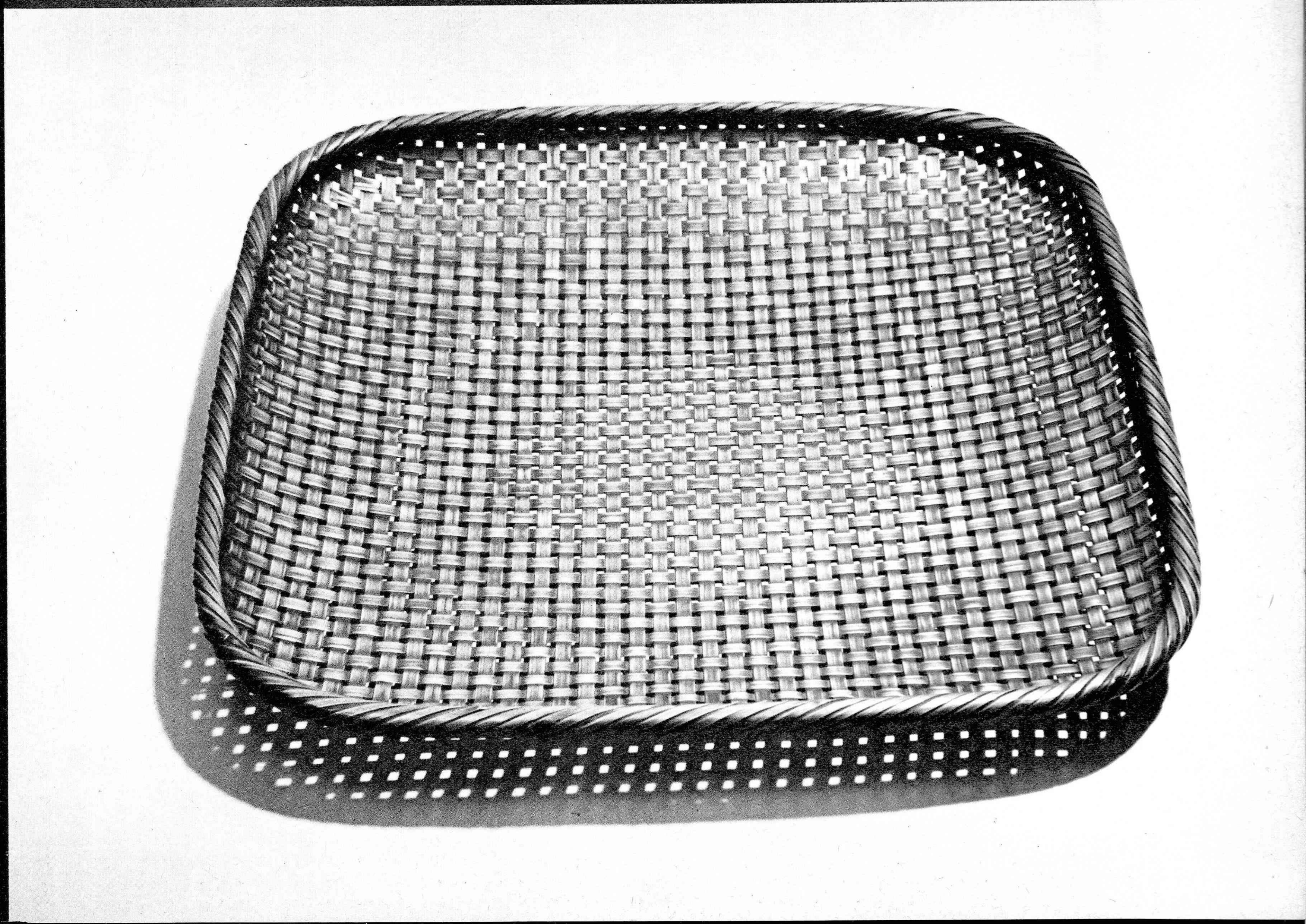



It may be said that Japanese sense of beauty toward bamboo is without parallel. It is loved for its inherent beauty as material for handicraft, and as a form of refined beauty. Therefore, the nature of the material plays a very important role in bamboo ware. It remains bamboo to the end, and a combination of bamboo slivers and stems, characterized by their straight and flexible nature, naturally create a unique beauty. That is, bamboo material itself displays clear sensous beauty.

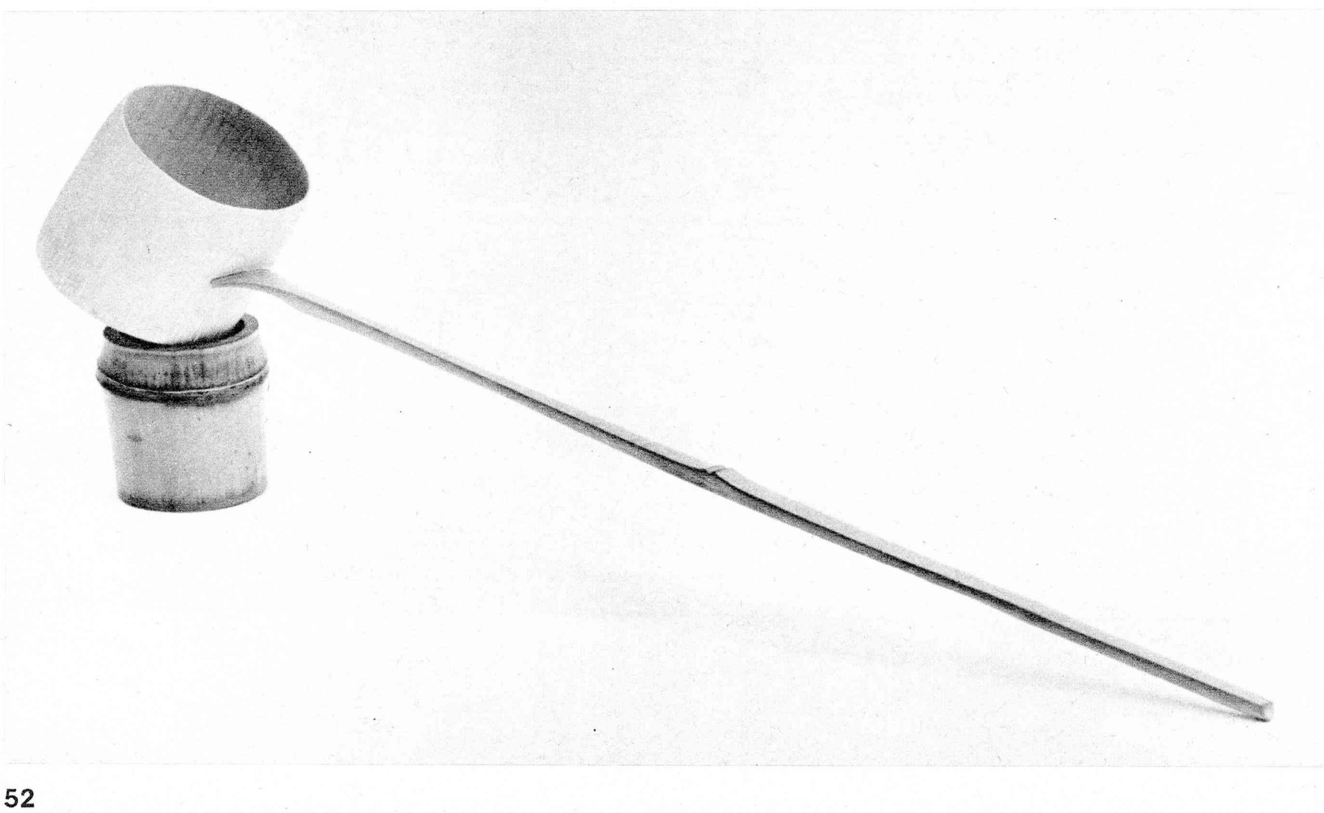












Many bamboo utensils are employed in the tea ceremony. Shown are "chasen" (tea-whisk for stirring tea, about 10 centimeters high) and "hishaku" (ladel for hot water, about 40 centimeters long). The charming simplicity of bamboo matches the spirit of tea ceremony.

Photographed by Michio Noguchi and Industrial Products Research Inst.

One Thousand Armed Men's Procession
NIKKO TOSHOGU FESTIVAL



The One Thousand Armed Men's Procession is the main event of the festival. Participants in the procession are all citizens of Nikko.



Among many annual festivals in Nikko, the One Thousand Armed Men's Procession of the Toshogu Shrine is most famous. Various groups of people dressed in costumes of the 17th century march under the stately cedar trees for which Nikko is so famous. Photo left: Procession of foot soldiers. Below: Parade of streamers with various family crests.



Annually on May 17th and 18th, Nikko's Toshogu Shrine commemorates the achivements of Tokugawa Ieyasu, founder of the Tokugawa Shogunate in the early 17th century. The main event of the celebration is the "Sennin Musha Gyoretsu" (One Thousand Armed Men's Procession), comprising various groups of people, dressed in costumes of the Tokugawa Period (1603-1868).

At 4 p.m. on the 17th, *mikoshi* (portable shrines) are transferred from the Toshogu Shrine to the nearby Futarasan Shrine, and it is from this point, at 11 a.m. the next day, that the grand procession begins. Men clad in the armor of warriors, fully equipped for battle, parade in a colorful display of martial spirit, reminiscent of the Tokugawa forces when they were at the peak of their power. One thousand two hundred men march in the procession, together with the portable shrines.

The portable shrines are dedicated to three great warriors, men of the past whose names deserve to be well-known even outside Japan. In addition to the shrine for Ieyasu, there is one for Minamoto Yoritomo of the 12th century, the founder of the Kamakura Shogunate and the man who initiated feudalism in Japan, and Toyotomi Hideyoshi, who preceded Ieyasu as the most powerful man in Japan and who unified the entire country, after a long period of internal warfare.

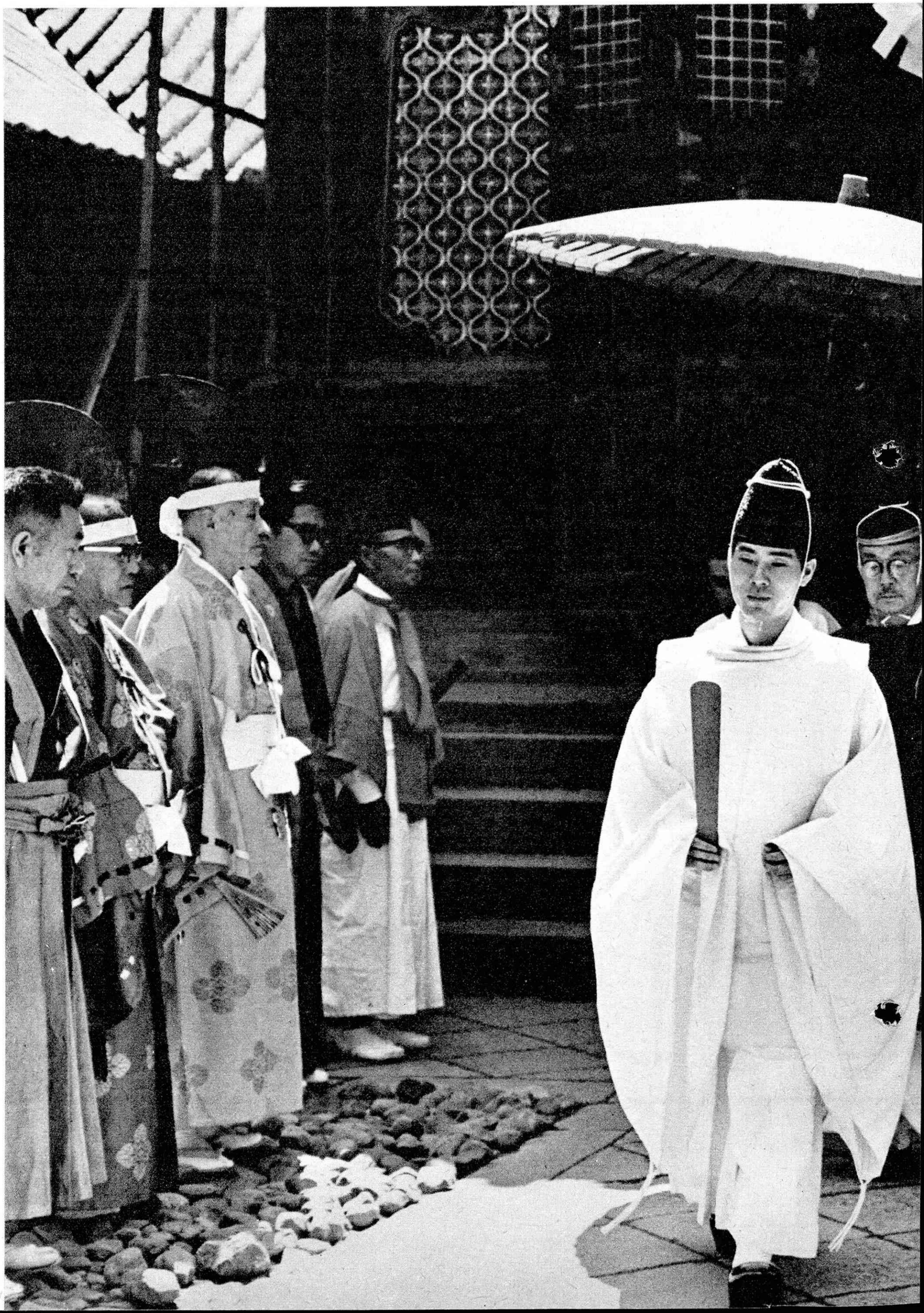
The procession passes under the stately cedar trees for which Nikko is so famous, marching on white gravel spread over the road for the occasion. Foot-soldiers with lances, dancers with lion masks, beautifully attired maidens, children, warrior monks, warriors bearing firearms, bows and arrows, or spears,—the spectators cannot help feeling transported to the past, 350 years ago, when the original procession took place.

The procession covers a distance of only one kilometer, and takes but an hour to do so, but for that period, time seems to stand still. At its destination, dishes of food, prepared in the style of centuries ago, are offered to the shrines, and then the young girls perform dances of the Tokugawa Period. At 1 p.m., the procession returns to the Toshogu Shrine and the celebration ends.

The armor, swords, helmets, spears and other articles carried by those on parade are not modern copies of articles used in the past. All were made and used in the Tokugawa Period, and are retained in the storehouses near the front gate of the Toshogu Shrine.

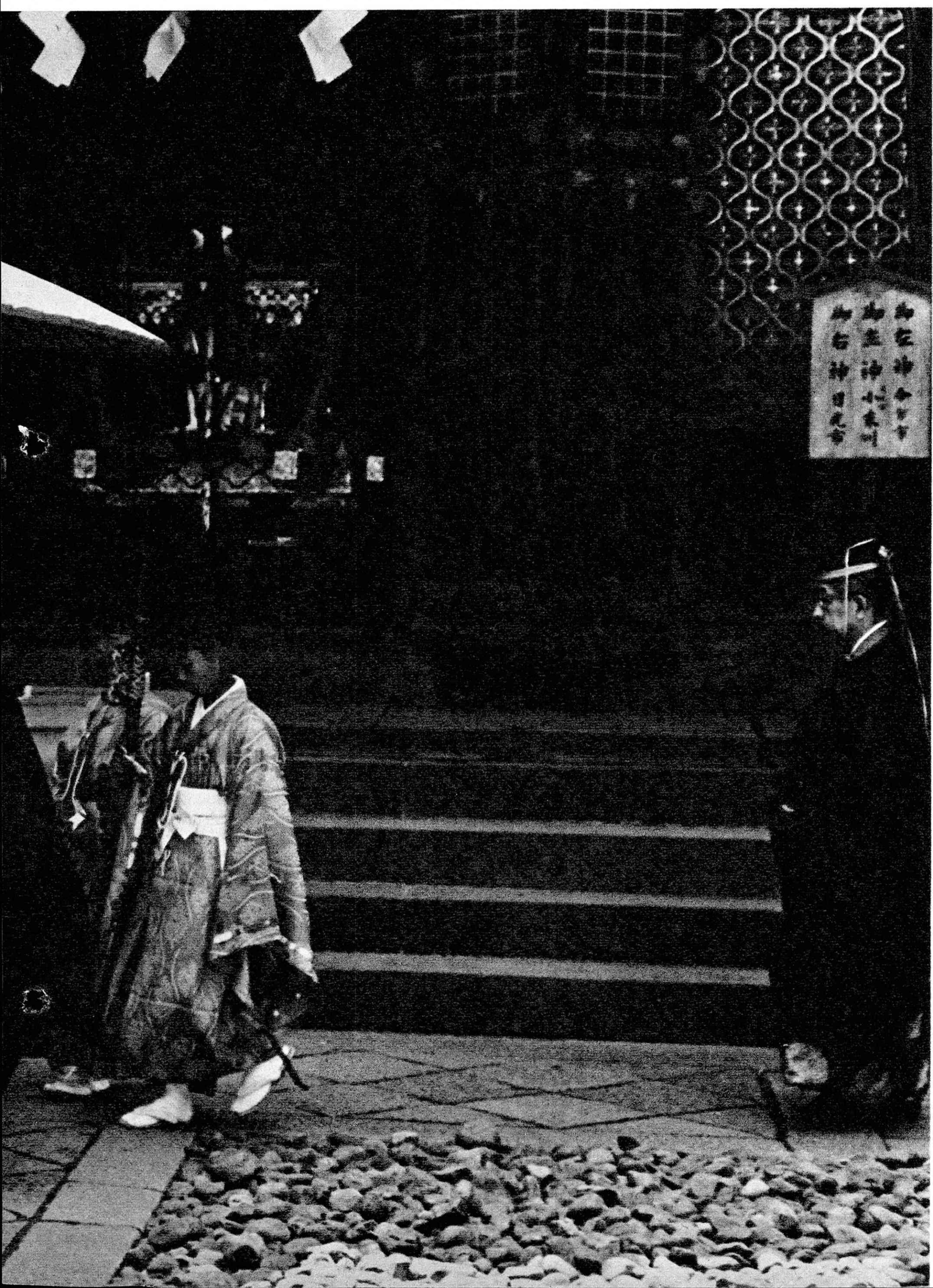
Every year, several hundred thousand people including many from abroad gather to watch the procession, filling the inns and hotels in the Nikko area, one of the most popular tourist spots in this country.







Left and below left: The procession is said to be an exact replica of a cortege formed in 1617 to carry the "divine spirit" of Tokugawa Ieyasu from Mt. Kuno in Shizuoka to Nikko. Leaders of the procession in those days were members of the Tokugawa family, but today their role is played by Toshogu priests.





Every year, more than 100,000 people including many from abroad gather to watch the colorful procession.





A demonstration of "Yabusame" (horseback archery) is also put on in the compound of Toshogu on May 17th.

Photographed by MICHIO NOGUCHI

Before the start of Yabusame the participants undergo a purification ceremony at the Toshogu Shrine. The scene recalls ancient "samurai" leaving for the battlefield.





ENSEMBLE NIPPONIA

A Chamber Orchestra Dedicated to Japanese Music

The Ensemble Nipponia, formed in the spring of 1964, is dedicated to Japanese music, but through assimilating the western style. It comprises 16 members—that is, 12 performers, three composers and one director. Almost all of the performers are accomplished players of Japanese classical music, while some of the composers have written many excellent pieces not only for Japanese instruments, but also for Western instruments and orchestras, winning high acclaim in musical circles.

One of the group's characteristics is that it is an ensemble of performers of various types of Japanese traditional instruments, each recognized as a distinguished soloist. Another is the participation of composers.

The number and types of performers and instruments differ according to the composition. The group is a chamber orchestra complete with wind, string and percussion instruments. Therefore, it has a broad repertoire using all or some of the instruments or at times a single instrument in solo performance.

The wind instruments include flute-like *shinobue, noh-kan* and *ryuteki,* and clarinet-like *shakuhachi* and *hichriki.* The strings include the so (varying from 13, 17 to 20 strings), the guitar-like *sangen* (thick, medium and thin-neck types) and the lute-like *biwa.* The percussions are divided into 10 types, embracing leather, wooded and metallic instruments.

Diverse elements of Japan's classical music have been variously utilized by European and American composers since the turn of the century. Essentially, however, a nation's tradition must be taken over and developed by the people themselves. With this in mind, Ensemble Nipponia is pushing forward a movement to modernize Japanese music by means of the nation's traditional instruments.

Since its inception in 1964, the group has presented 11 regular concerts and played more than 50 times for radio and television programs of the Japan Broadcasting Corporation (NHK). At the Sixth Annual Concert in November 1967, the Ensemble Nipponia was awarded the prize of Encouragement on the occasion of the Art Festival sponsored by the Japanese Ministry of Education.

Frequently played compositions in its repertoire include "Suite for Children by Japanese Instruments," "Song of Japanese Dolls," "Song of Love" and "Poem for Shakuhachi,"



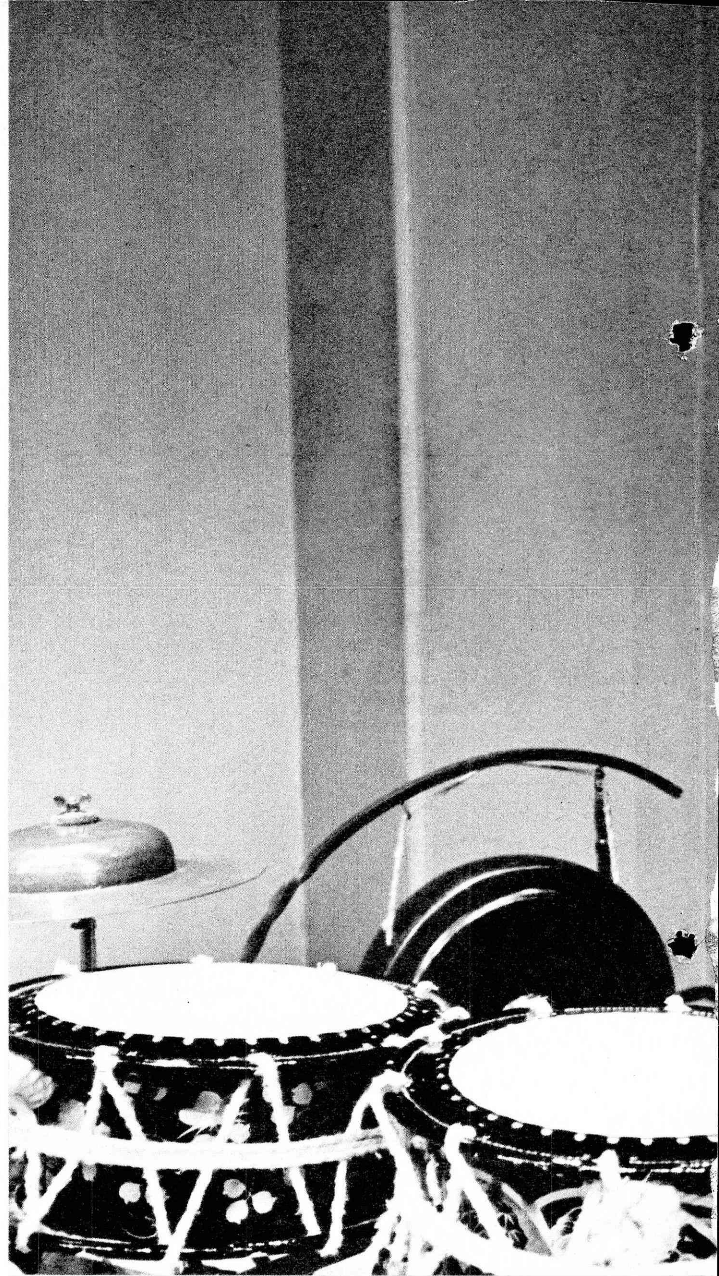
Left: The composers and performers of the Ensemble Nipponia are creating the "music of Japan" with traditional Japanese musical instruments on the basis of the people's sentiments. For they are striving to reassess and rediscover Japan's classical music from a modern point of view. Below: The "so" was introduced from China around the eighth century and mainly used in "gagaku." The typical "so" consists of a paulownia-wood frame about 180 centimeters long and 30 centimeters wide with 13 silk strings.



all composed by Katsutoshi Nagasawa; "Kurudando, A Cantata for Japanese Instruments and Mixed Chorus based on a melody of the Amami Islands," "Paraphrase after Ancient Japanese Music," "Ballades for Koto Solo" and "Tennyo" (Heaveny Maiden), all composed by Minoru Miki; as well as "Suite for Mask by Japanese Instruments," composed by Yasuo Motohashi.

In addition to Japanese works, the group has arranged and performed Western compositions, such as the Rondeau Polonaise and Badinerie from Suite No. 2 by Johann Sebastian Bach, La Fille Aux Cheveux De Lin, La Cathedrale Engloutie by Claude Debussy and the English folk song Greensleeves.

The ensemble is now making preparations for an extended overseas concert tour in response to many invitations from abroad.




Opposite page: "Biwa," a lute-like instrument with four or five strings across an egg-apple-shaped body was first brought to Japan in the Nara Period. Miss Mikiko Yamada learned to play classical music on the "biwa" in her childhood. Later, she established a modern method of "biwa" performance through her own ingenuity. Left: Takuo Tamura and Yoshinori Shimizu, below right, are in charge of percussion instruments in the ensemble. At concerts, they play more than 10 kinds of traditional Japanese percussion instruments. They have acquired unique performance techniques by balancing harmonious of the fundamentals of Japanese and Western percussion instruments. Below left: This clarinet-like instrument "shakuhachi" is about 55 centimeters in diameter. It is made of the jointed stem of a bamboo. It has holes in front and one hole on the back. Katsuya Yokoyama, a famous shakuhachi soloist, performs the solo for Toru Takemitsu's "November Steps" with the New York Philharmonic Orchestra.





Photos by Kokusai Bunka Shinko Kai.



In the world's toughest rally!

Class tells, whatever the race. DATSUN took it all. 1st and 2nd in the overall event, 1st—for the second year in a row—in the team contest, and all places, 1st through 7th, in the class competition (last year we were 1st through 6th, so we're even getting better). Left behind were the Ford, Peugeot, Lancia and BLMC teams. Where? In the 1970 East African Safari Rally, a gruelling 5,120-kilometer (3,200-mile) drive over some of the world's roughest terrain at an average speed of 112 km/h (70 mph).

And it was rough. Officials and veteran drivers all agreed this year's road conditions were "the worst in the Safari's history." One driver was swept away in a flash flood. Only 19 of the 91 cars even finished as torrential rains turned the road into a sea of mud. Cars overturned, drivers wound up in the hospital. But we won. Won big, and we don't mind shouting about it. Because the DATSUN 1600 that won the Safari is the same car we sell you. That's class all the way.

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In This Issue

EIHEIJI TEMPLE

Mecca of Zen Priests

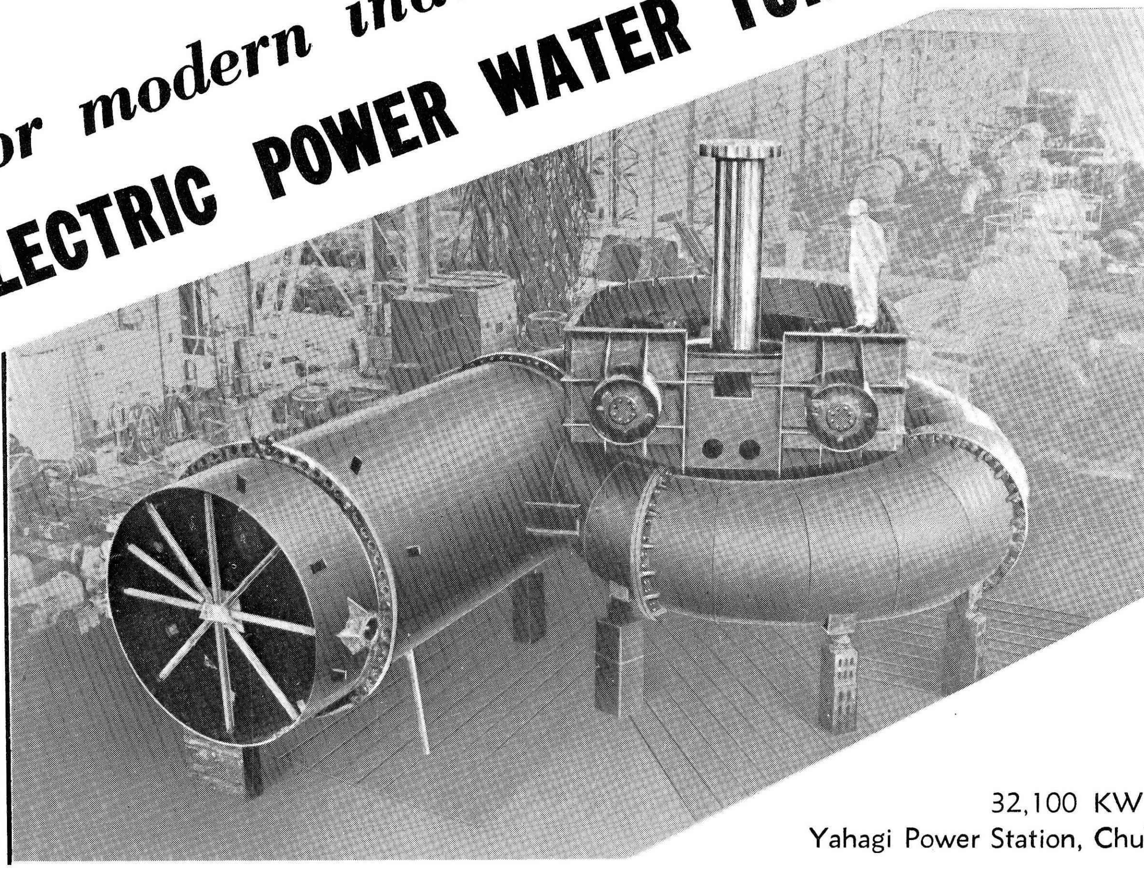
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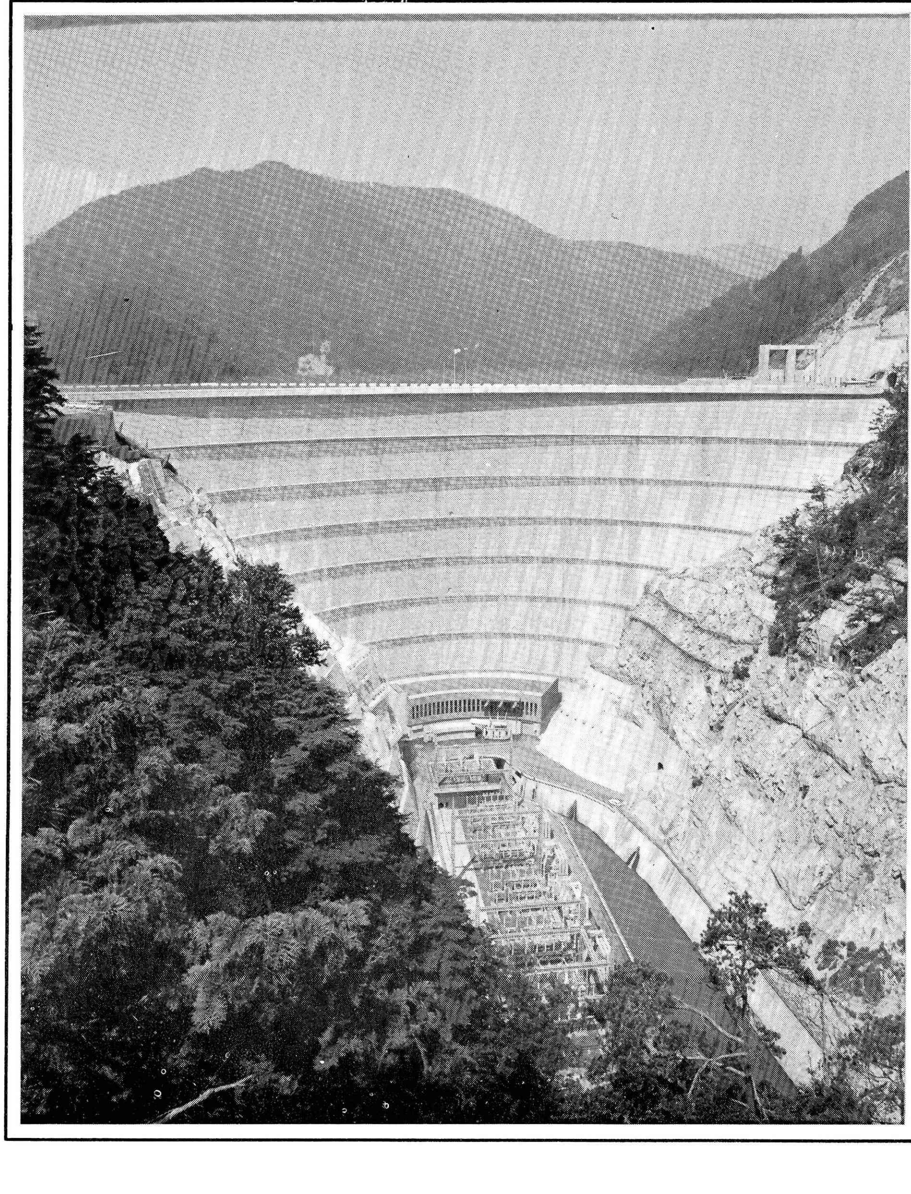
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Construction of Pumped Storage Power Station Making Headway

Pumped Storage Power Stations have become increasingly important in recent years as a stable source of power supply, and also to enable effective utilization of electric power at night.
Tokyo Electric Power Co. has completed this year construction of a Pumped Storage Power Station at the Azusa River with total power output of 900,000 KW at the Azusa River originating in the Northern Alps. It consists of three dams and three power generation stations. It is currently building another Pumped Storage Power Station at the Takase River which also flows from the Northern Alps. It is a giant power station with output capacity of 1,300,000 KW.

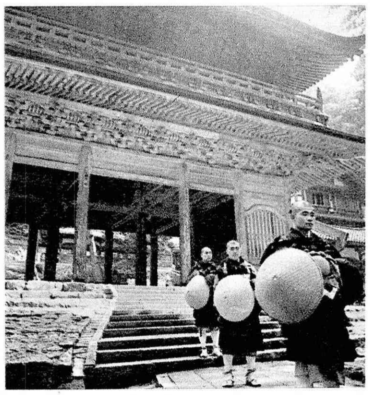
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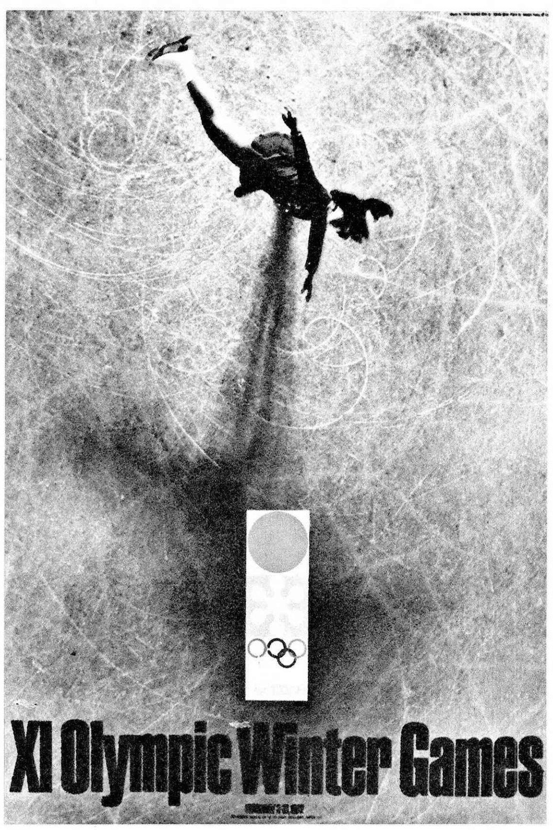
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Japanese Currents

SAPPORO OLYMPICS

Poster No. 3 Completed for Sapporo Winter Olympics

Poster No. 3 for the Winter Olympics, at Sapporo, Japan, in February 1972, has recently been completed. It features a photo of figure skating as against the Olympic mark for Poster No. 1 and skiing for Poster No. 2. The designer is Yusaku Kamekura, also responsible for Poster No. 2. Photography was by Takayuki Ogawa with the motif of a "figure skater like a dancing white crane on ice." The size is 103×73 centimeters.



TOKYO

"Padlock Sticker" for Illegal Parking

The Metropolitan Police Department, eager to stamp out illegal parking, has recently adopted the "Padlock Stickers" in a redoubled effort to tighten control.



The sticker is in a vinyl bag 13 centimeters long and 11 centimeters wide. A small padlock in the bag has a short wire, and if the wire is wound round a side mirror and the padlock is fastened, the sticker cannot be removed unless and until the offender reports to the specified police box. So far, patrolmen have attached paper stickers to illegally parked cars so that violaters might report to nearby police boxes. However, many offenders simply tore the paper stickers off and fled. That is why the "Padlock Stickers" have made their debut.

Basically, parking space is extremely limited in the heart of Tokyo, although every road is flooded with automobiles. As a result, it looks like illegal parking of cars being taken for granted. In these circumstances, illegally parked cars occupy much of road space, worsening traffic congestion and contributing to air pollution due to auto exhaust fumes.

The "Padlock Sticker" is designed to tighten control on illegal parking in order to induce those people who need not necessarily drive their cars into central Tokyo, to use electric train or bus service instead.

"Pedestrians' Haven"

On Sunday August 2, the system of "holiday promenade"—that is, "pedestrians' haven"—was started in Tokyo in the wake of a similar experiment in New York, barring all automobiles from main streets in Tokyo's four busy districts of Ginza, Shinjuku, Ikebukuro and Asakusa. Although cars were banished for only half a day, multitudes of people, estimated at 780,000, thronged the streets. Freed from the "three evils" of motor traffic—that is, accidents, noise and air pollution, they enjoyed a "restoration of humanity."

In Ginza, Japan's representative shopping center of long standing, potted willow trees and phoenixes were arranged and open-air tea shops set up along the street by department stores and various shops. The street was packed with old people recalling Ginza of good old days as well as families, large and small. Meanwhile, conspicuous in Shinjuku, the town of the youth, were lovers strolling along streets and singing groups of young people carrying guitars. All the people crowding the four districts appeared fully satisfied with a new form of holiday. They accepted it as a natural form of man's habitat and their delight amounted to an expression of earnest wish for still more drastic measures for elimination of traffic accidents and environmental pollution.



On the day, automobiles were barred from a total of 122 routes in the four districts with a total length of 14 kilometers. There was no traffic snarl as feared in some quarters, while local shops chalked up big sales through varied guest-attracting tactics. Meanwhile, the density of carbon monoxide in the air dropped to less than one half of the levels on ordinary Sundays in the four districts. In Shinjuku, it plummeted to nil between 1 and 2 p.m.—an almost miraculous phenomenon. In this way, the idea of "pedestrians' haven" proved a big success from the start.

The Metropolitan Police Department decided to enforce the new system every Sunday, while spreading it to other parts of Tokyo. Similar trials also got under way in several provincial cities the same day. At any rate, the success of the project has brought it home afresh to the general public how important it is to emancipate the people from the evil effects of automobiles. It has thus given rise to second thoughts about the one-sided progress of "motorization." Photo shows Ginza.

POSTAGE STAMP

Japanese Stamp Wins Grand Prix at Int'l Show

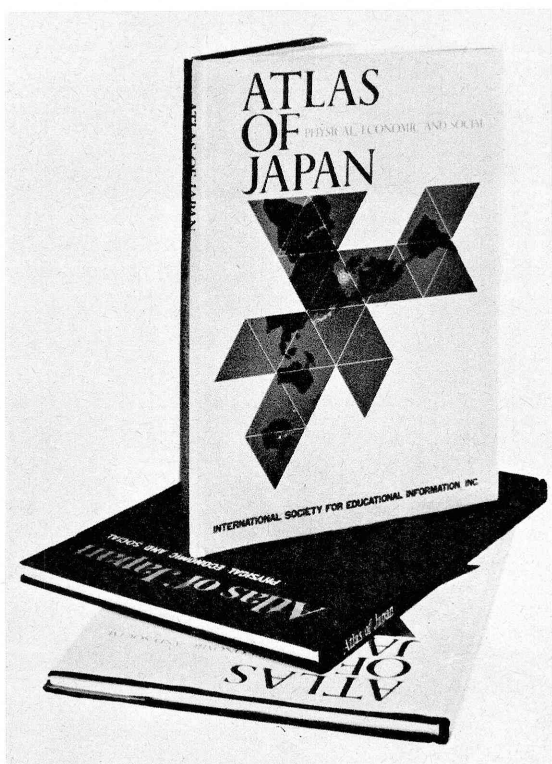


A 15-yen stamp featuring the Koya-Ryujin State-Designated Park, issued by the Postal Services Ministry in March last year, was awarded the Grand Prix at the 10th International Philatelic Exhibition of Europe, held in Naples, Italy. This marks the first time that a Japanese stamp has received a prize at an international show.

The design of the stamp represents a landscape of the Koya-Ryujin State-Designated Park spanning the boundary of Wakayama and Nara Prefectures. It is photogravured in four colors. Size is 22.5 millimeters long and 33 millimeters wide with each sheet comprising 20 stamps.

EDUCATION

ATLAS OF JAPAN—Physical, Economic and Social



This atlas consists of 64 pages of maps and as many pages of text and explanations in a format of 27×37 cm. Printed in 12 colors, the map section consists of 46 thematic maps clarifying Japan's geography, economy, society and culture. The maps cover a large variety of themes, such as volcanoes and earthquakes, snowfall and frost, electric power, iron and steel and petroleum industries, international trade by ports, occupational structure, mass media, universities and museums, as well as national parks, reserves and monuments. Each theme is explained at length in three languages—English, French and Spanish—in the explanatory pages.

Single maps of Japan in English or collections of several such maps have so far been published by several firms in Japan. But this marks the first publication in the world of a full-scale atlas of Japan in Western languages, composed of as many as 128 pages of maps and explanations. It is the result of laborious work by Professor Emeritus Tatsujiro Ishida of Hitotsubashi University and 13 other geographers over a period of five years.

The publisher, the International Society for Educational Information (Kikuei Bldg., 3-5, Shintomi-cho, Chuo-ku, Tokyo), is known for its painstaking effort to check articles and photos relating to Japan in foreign textbooks and encyclopedias and to provide publishers with correct information with a view to conveying a true picture of Japan to foreign readers and thereby helping to promote mutual understanding among nations. The new atlas has been published in line with this objective of providing an accurate understanding of Japan. The volume is priced at (US) $20.00 (not including postage). This is a limited edition with a maximum of 2,000 copies available.

TECHNOLOGY

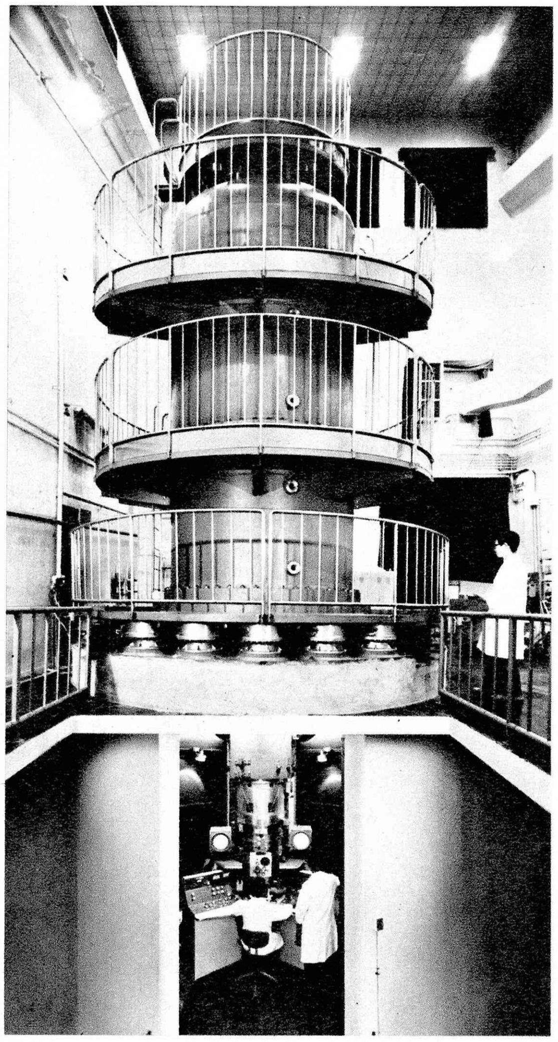
Extra High Voltage Electron Microscope Developed

A three million volt electron microscope has been developed through a joint effort by Hitachi, Ltd. and Osaka University.

The new instrument is the world's highest voltage electron microscope. Because of this high voltage, the transmitted electron passes through specimens of far greater thickness than was possible with ordinary electron microscopes, consequently reducing the damage rate of specimen. At the same time, a highly electron-sensitive TV camera, standard equipment on the new Hitachi microscope, can pick up low density electron beams, which also helps reduce specimen damages.

Another feature of the new microscope is a closed cell device in which cellular objects such as bacteria and living organic cells can float in an environmental air, gas or liquid body. The closed cell is made of oxidized aluminum film or specially treated glass which

Japanese Currents



lets through electron beams but prevents the environmental body from leaking into the microscope's high-vacuum space.

The closed cell device has made possible observation of not only living cellular objects but also of crystallization of molten metal specimens. The new microscope will be installed at Osaka University next year.

TRANSPORTATION

"Kampu Ferry" Service Inaugurated

Driver's dream of traveling abroad by their own cars came true in some measure when the Kampu Ferry (Shimonoseki, Yamaguchi Prefecture, Japan—Pusan, Republic of Korea) was inaugurated on June 19 as Japan's first international ferry service.

Shimonoseki and Pusan are about 220 kilometers apart with the rough Genkai Sea in between. In former days, luxury liners of 7,000 to 8,000 tons used to shuttle between the two ports. With the end of World War II, however, the service came to a halt, and the reopening of the ferry service along the route has long since been awaited. Nowadays, "motorization" has made marked progress in both Japan and the Republic of Korea, while networks of expressways have been expanded and improved with great rapidity in the two countries. It is against the backdrop of such a new era in both nations that the Kampu Ferry has made its debut.



The 3,874-gross-ton Ferry Kampu, built for the service, is a smart passenger boat 105 meters in length and 19 meters in width, a fitting symbol of the new age. It is capable of traveling between Shimonoseki and Pusan in seven hours with 600 passengers and 60 cars on board. Seoul is now a four hours' drive from Pusan by a recently completed highway between the two Korean cities. Upon completion of the projected expressway across the Chugoku region of Japan, therefore, Seoul will be reached from Tokyo in only about 22 hours via expressways and the new ferry service.

The Kampu Ferry has been operating smoothly since its opening on June 19. It is also said that travelers are favorably impressed with the entry and exit procedures at the two terminal ports because of their swiftness and cordiality. At any rate, the new ferry service is expected to stimulate interchanges between the two nations in both tourism and transport of goods, contributing largely to furthering their mutual friendship.

NEW PRODUCTS

TV-Type Movie Projector

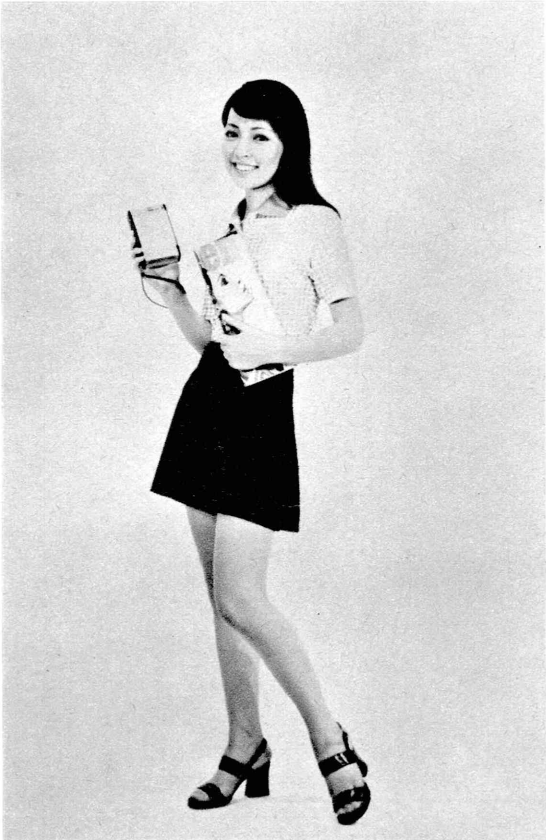
Fuji Photo Film Co., a major photo film maker in Japan, has developed the TV-type movie projector "Fujics TM 40" (photo) by incorporating the video cassette formula into 8-mm cineprojector. When a cassette-type 8-mm film is inserted into the projector, the movie is projected on a screen—the size of a 10-inch TV receiver—through a 16-faced prism of a new type. Conventional projectors can screen 8-mm movies only in dark places. But a big characteristic of the new projector is



that 8-mm movies can be enjoyed even in bright places as is the case with television.

Moreover, the film-feeding system of conventional projectors gives off unpleasant noise and tends to damage film. But the new projector has eliminated such noise for the first time in the world through the continuous feed of film, made possible by the use of a many-faced prism. Price: 65,000 yen.

Midget Cassette Tape Recorder



The world's smallest cassette tape recorder "Cassette Mini" (photo) was recently put on sale by Sanyo Electric Co. Reduced in size through the improvement of motor and other parts, it measures only 14 centimeters in length, 8.8 centimeters wide and 3.6 centimeters thick, and weighs merely 620 grams.

With a built-in microphone, it can be held in a pocket during recording. Moreover, the recorded sound does not fluctuate even if the tape recorder is swung around.

Powered by three batteries, "Cassette Mini" is capable of recording or reproduction for two hours running. The battery lamp goes on when it becomes necessary to change the batteries. This is designed to prevent a slowdown in the revolution of reels due to the weakening of power.

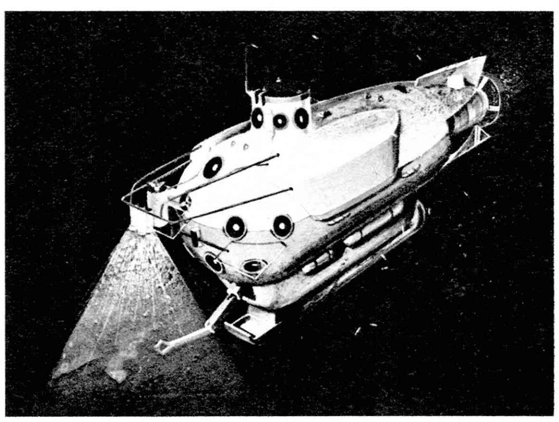
Price is 27,800 yen (including attachments).

Undersea Work Ship

Recently, the Kawasaki Heavy Industries laid the keel for an undersea work ship, which may play a major part in ocean development—a new comprehensive industrial sector which is developing rapidly in this country.

The vessel, displacing six tons, is an elliptical "mini" boat measuring 6.3 meters long and 1.6 meters wide. But it can reach a continental shelf 300 meters deep in 30 minutes with a crew of three. Moreover, it can move about on the ocean bed at 6.3 kilometers per hour, and is capable of operating underwater for five hours.

Equipped with a 1.5-meter-long manipulator, the ship can engage in a broad range of undersea work, such as the laying and inspection of undersea cables and pipelines, surveying the ocean bottom and shore protection work. It can also move an object weighing 200 kilograms with the cooperation of divers. To facilitate underwater work, the vessel has 14 portholes (inner diameter: 15 centimeters). Moreover, special care is used to ensure maximum safety. When emergency surfacing is necessary, a pressure-proof battery tank, attached to the bottom of the ship, can be detached. Besides, if and when the manipulator is caught in something, the ship can also detach its "hand" section to enable prompt surfacing.



EIHEIJI TEMPLE: MECCA OF ZEN PRIESTS

Zen Buddhism was born in India, developed in China and flowered in Japan. Nowadays, it has perished in both India and China, and persists in Japan alone. Religiously speaking, Zen is a sect of Buddhism. However, it has transcended the bounds of a mere religion and contributed immeasurably to forming the spiritual climate of the Japanese people and developing their culture. It is well-nigh impossible to think of the quintessence of Japanese culture minus the concept of Zen. In recent years, meanwhile, interest in Zen has mounted to the extent of a sort of boom not only in Japan but also in other countries. Apparently, this does not represent a mere yearning for mysticism. Many people, it is believed, are seeking Zen as a spiritual prop for their life, which is apt to be swept away by the tide of highly advanced mechanical civilization.

Introduced here is the Eiheiji Temple, the mother temple of the Soto sect, a branch of Zen Buddhism. This is the largest Zen temple in Japan, and its branch temples in all parts of the country number as many as 15,000.

As far back as in 1243 that Master Priest Dogen, the creator of the Soto sect, established the Eiheiji Temple in the remote mountains of Shihi in Echizen (now Fukui Prefecture). Since then the temple has been renowned as a training mecca of Zen priests over more than 700 years. Even today, nearly 200 monks are undergoing rigorous training at the temple day in and day out.

What is Zen? What are the characteristics of the Zen thought? But it is naturally impossible to answer these questions in simple terms. For Zen has boundless depth and lays prime emphasis upon practice rather than theory. Even so, we can perceive the basic form of Zen and its true essence in every movement of practicing monks and very structure in the compound of the Eiheiji Temple.



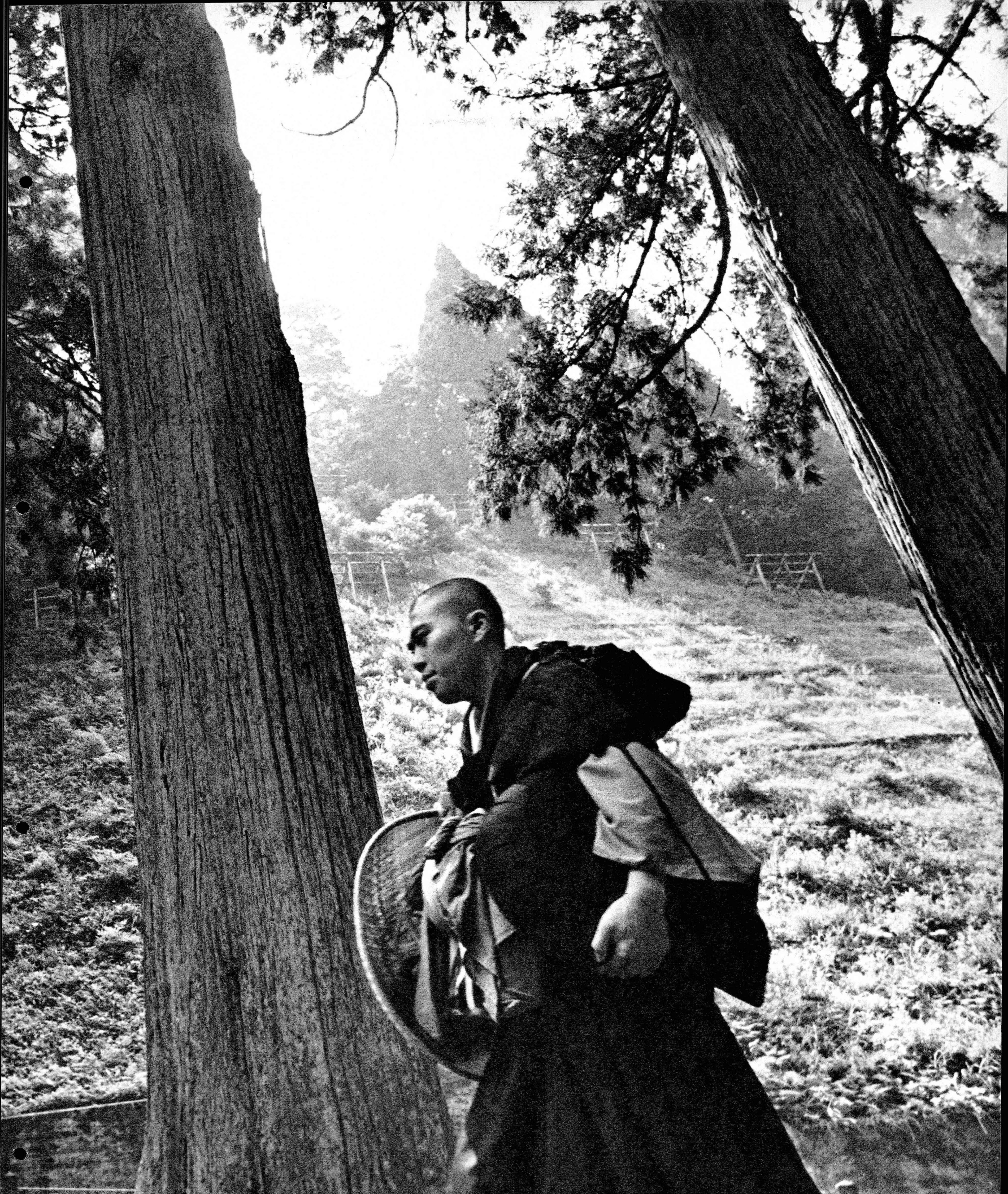
In the compound of Eiheiji Temple, time flows quietly and slowly. In this stillness, Zen priests are intent upon spending every moment of their life in a substantial way. Amid a simple and regular daily life, they practice traditions handed down from their predecessors in order to make their respective life full and complete.

Photographed by MASAMICHI SUMIYOSHI





Practicing monks in traveling costume walk on an approach to Eiheiji Temple. Under their left arms are cushion for



use during "zazen" (umbilicular contemplation). Packages on their back contain all the necessities of their daily life.



MASTER ZEN PRIEST DOGEN AND HIS TEACHINGS

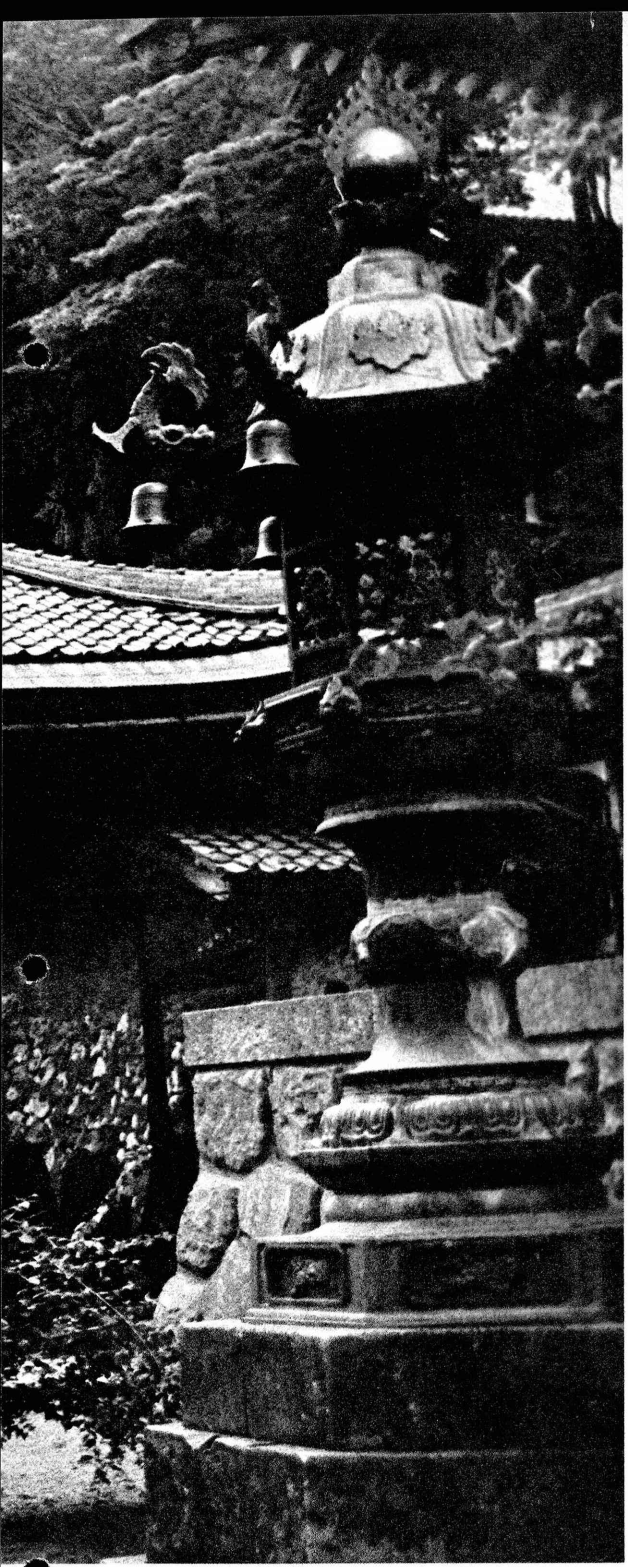
By JOKO KAWAGUCHI
Priest, Eiheiji Temple

THE Eiheiji Temple, mother temple of the Soto Sect of Zen Buddhism with as many as 15,000 branch temples under its wing, is situated at Shihi along a quiet stream in a mountainous area 16 kilometers southeast of Fukui City. Established in 1243 by High Priest Dogen, the founder of the Soto Sect, it is formally called the Kichijozan Eiheiji. "Kichijo" means auspicious, clean, sacred and true, while "Eihei" signifies eternal peace—that is, the ideal of mankind. Even today, there are approximately 200 monks at the temple, who, adoring Dogen for his great virtues, are devoting themselves to rigorous self-training day in and day out. First, let us look back on the life of Dogen.

Dogen was born to a noble family in Kyoto in 1200. When still a child, however, he was bereaved of his parents and at the age of 13, climbed Mt. Hiei and entered the priesthood to study Buddhism. But this young aspirant for truth became disgusted with the priests of Mt. Hiei, who were wedded to outmoded traditions, displaying a lust for power. After three years, he descended the mountain and visited High Priest Eisai (1141-1215, founder of the Rinzai Sect of Zen Buddhism, a major Zen sect along with Soto), at the Kenninji Temple in Kyoto. He was thus introduced to Zen Buddhism for the first time by Eisai, who had brought it from China as a new Buddhism of practical experience.

At the age of 24, Dogen went to China and studied under High Priest Juching at Mt. Tientung. And, after being initiated into the secrets of Zen Buddhism, he returned to Japan at the age of 28. For several years afterwards, he stayed at the Kenninji Temple, refining his religious knowledge, observing the condition of Japan and making friends with Mother Nature. In 1236, he set up the Koshoji Temple in the suburbs of Kyoto and started to propagate what he considered the true Buddhism he had studied in China. It was a Buddhism centered in "umbilicular contemplation" (sitting in religious meditation) and free of any sectarianism. Soon his reputation spread throughout Kyoto, and an increasing number of people flocked to the temple to seek his instruction.

In 1243, however, Dogen suddenly left the Koshoji Temple, moved with many disciples to the hamlet of Shihi in Echizen and established a new temple—the Eiheiji. But what



Zen temples go into action early in the morning. At Eiheiji Temple, monks get up at 3:00 a.m. in summer and 4 p.m. even in winter. It is still dark outside. After washing face, they engage early-morning "zazen" for about an hour, and then perform religious service and sutra chanting in the Main Hall. Photo shows monks leaving the Monks Hall for the Main Hall after the morning contemplation. The day starts to break around this time. The Monks Hall is the place where practicing monks engage in religious meditation, eat meal and sleep.

caused him to abandon the prospering Koshoji and move to a remote locality? One reason was that his master Juching had told him a remote mountainous area far away from cities was an ideal place for religious meditation which Dogen himself felt to be true. Another reason was that the feudal lord of Echizen, a devout follower of Dogen, learned of his sentiment and gave the Shihi district to the priest.

Dogen loved the landscape of Shihi and studied and practiced Zen Buddhism with his disciples, writing many books, including the famed "Shobogenzo" (his representative work explaining the quintessence of Buddhism), until he passed away in 1253 at the age of 54. Many excellent priests grew up among his disciples and spread his teachings throughout the country.

Then what are the teachings of Dogen?

ABOUT 2,500 years ago, Sakyamuni, the founder of Buddhism, gave up his life as Crown Prince and entered the priesthood. For six years after that, he studied and practiced all self-training methods then available in India, but failed to attain the state of enlightenment—that is, the state of infinity and absoluteness. Lastly, therefore, he sat in meditation under a linden tree by a stream. Forty days later, when he saw the morning star of December 8, he suddenly reached the spiritual state of Buddha (a Sanscrit word meaning a person who has reached the state of spiritual enlightenment and has realized the truth). Sakyamuni thus delved deeper into himself by means of umbilicular contemplation, giving birth to the new religion of Buddhism.

Sakyamuni conveyed the secrets of his enlightenment to Maka Kasho, one of his most trusted disciples, not by words but by telepathic communication. After that, his teachings were handed down from disciple to disciple. The 28th Buddha—Boddhi Dharma—traveled from India to China about 1,500 years ago to introduce Buddhism centering on umbilicular contemplation. It was a Buddhism of practical experience in contrast with a philosophically and idealistically stereotyped Buddhism prevalent in China from olden times. Boddhi Dharma's teachings were then handed down and developed from generation to generation until the sixth master Eno completed and established China's Zen Buddhism. High Priest Eno had two leading disciples, who later divided China's Zen Buddhism into two sects, which in turn split into five.

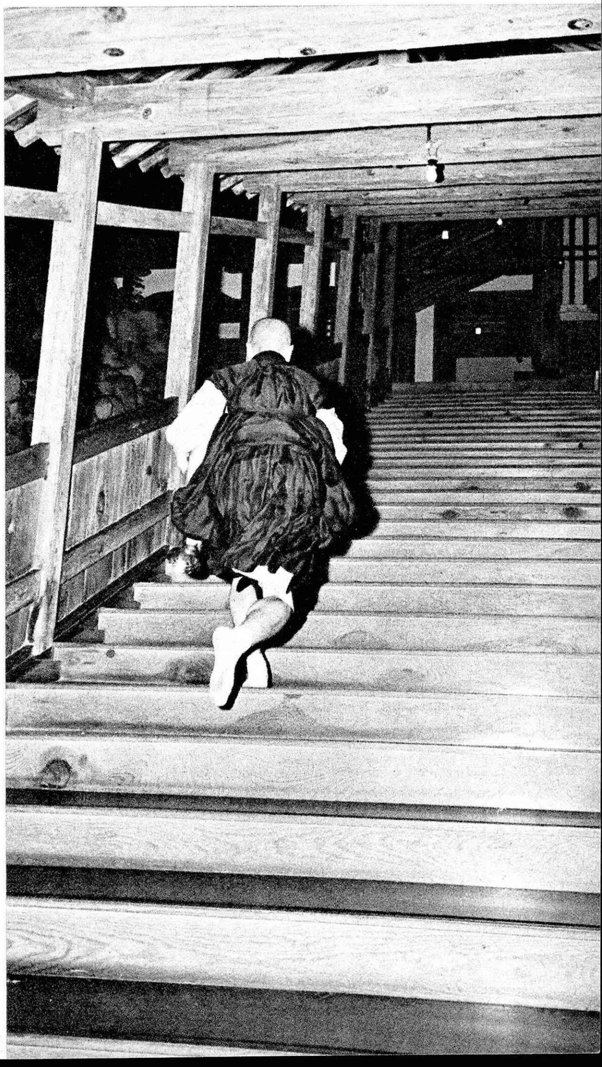
Dogen's teachings were based on the Zen Buddhism prior to such split—that is, the Buddhism of Boddhi Dharma who had correctly preserved Sakyamuni's teachings. Therefore, Dogen had a lofty sense of mission predicated upon the firm belief that his Buddhism was not a mere branch of Buddhism but the very teachings of Sakyamuni himself—namely, the true and orthodox.

DOGEN'S Zen Buddhism has two characteristics. One is a "single-minded devotion to umbilicular contemplation." The other is that "self-training and spiritual enlightenment are identical and not two different things."

"Single-minded devotion to umbilicular contemplation" signifies meditation without purpose. That is, one should not look forward to something as a result of such meditation and not undertake umbilicular contemplation for the express purpose of attaining the state of spiritual enlightenment and becoming a Buddha. In other words, one must sit in meditation with nothing on one's mind. Dogen says this spiritual stance should apply to every facet of one's life. When one works, one must devote the whole of one's self to the work. When one eats, one must devote the whole of one's self to eating. And when one sleeps, one must devote the whole of one's self to sleeping. Dogen asserts Zen Buddhism is not something that is separated from one's daily life. He acknowledges the same value in every act of life as that of umbilicular contemplation. Herein lies the essence of Dogen's Zen Buddhism.

Such teachings must be learned not by theory but by one's own actual experiences. Dogen's teachings are called a "religion of action" and a "religion of experience." For it is a religion which is inseparable from daily life and manifests itself through actual experience.

At the hour of rising every morning, a practicing monk on duty runs about temple building by noisily ringing a bell.



And the "single-minded devotion to umbilicular contemplation" stems from the notion that "self-training and spiritual enlightenment are not two different things."

The commonly accepted view is that spiritual enlightenment can be reached as a result of self-training. However, Dogen's position is that we inherently have the essential nature of Buddha—a man who has attained the state of spiritual enlightenment. Therefore, he argues, we must engage in self-training with an awareness of this—namely, that we live in a state of enlightenment. He calls upon us to undertake self-training from the standpoint that we are inherently Buddhas—not that we become Buddhas as a result of self-training. In other words, one's very act of self-training through meditation directly puts one in a state of enlightenment, and thus, "enlightenment" and "self-training" are by no means different.

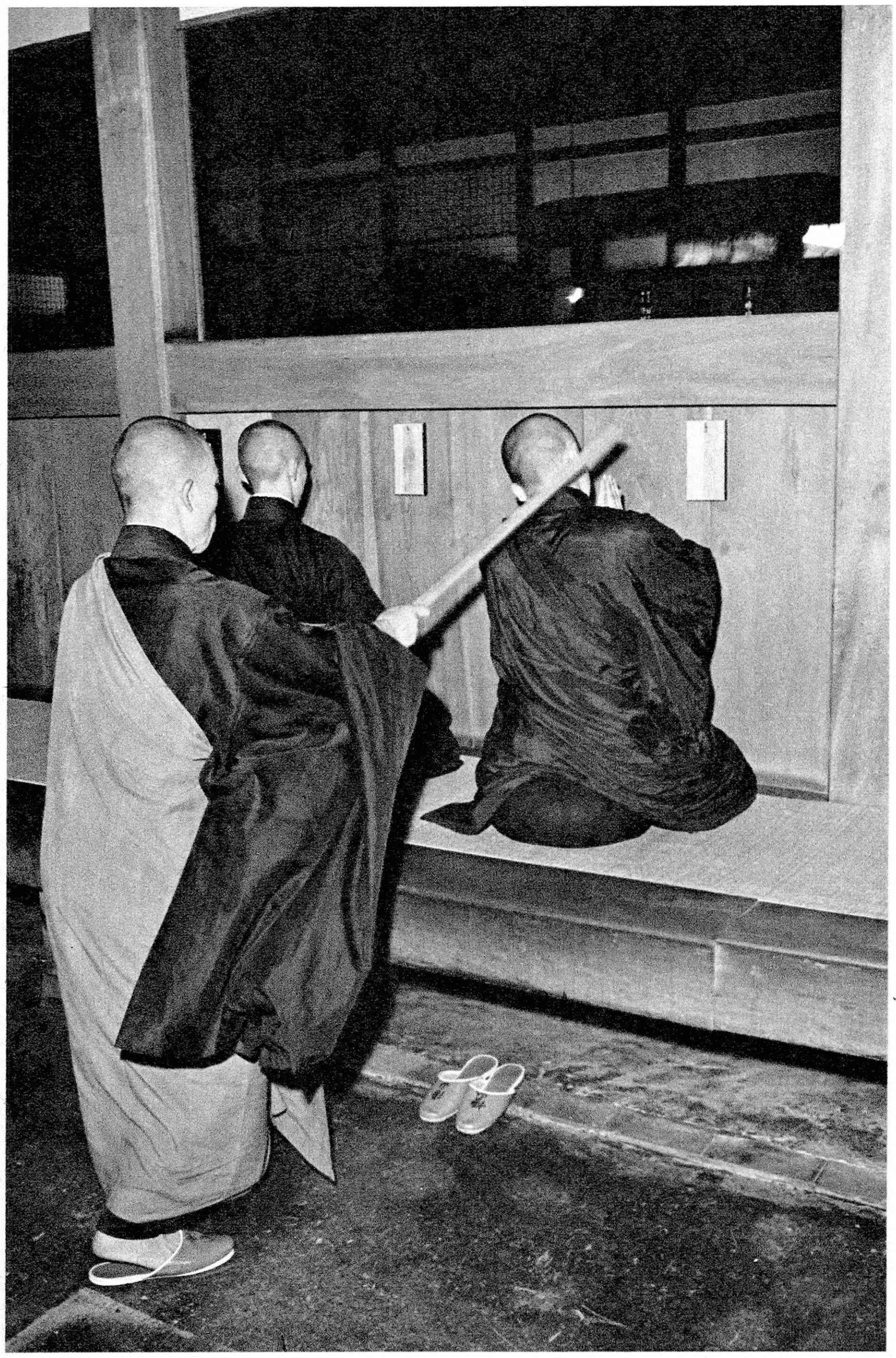
In this way, the umbilicular contemplation as preached by Dogen is not specifically designed for attainment of spiritual enlightenment, but is based upon enlightenment itself. Therefore, it means endless self-training. And such umbilicular contemplation represents the very act of Buddha and conduct higher than the human level, which is thoroughly immaculate. Dogen tells us that our daily life should be a continuation of this immaculate behavior.

LASTLY, let me explain another of his important teachings, that "one must live with a full awareness of boundless value in one's everyday life."

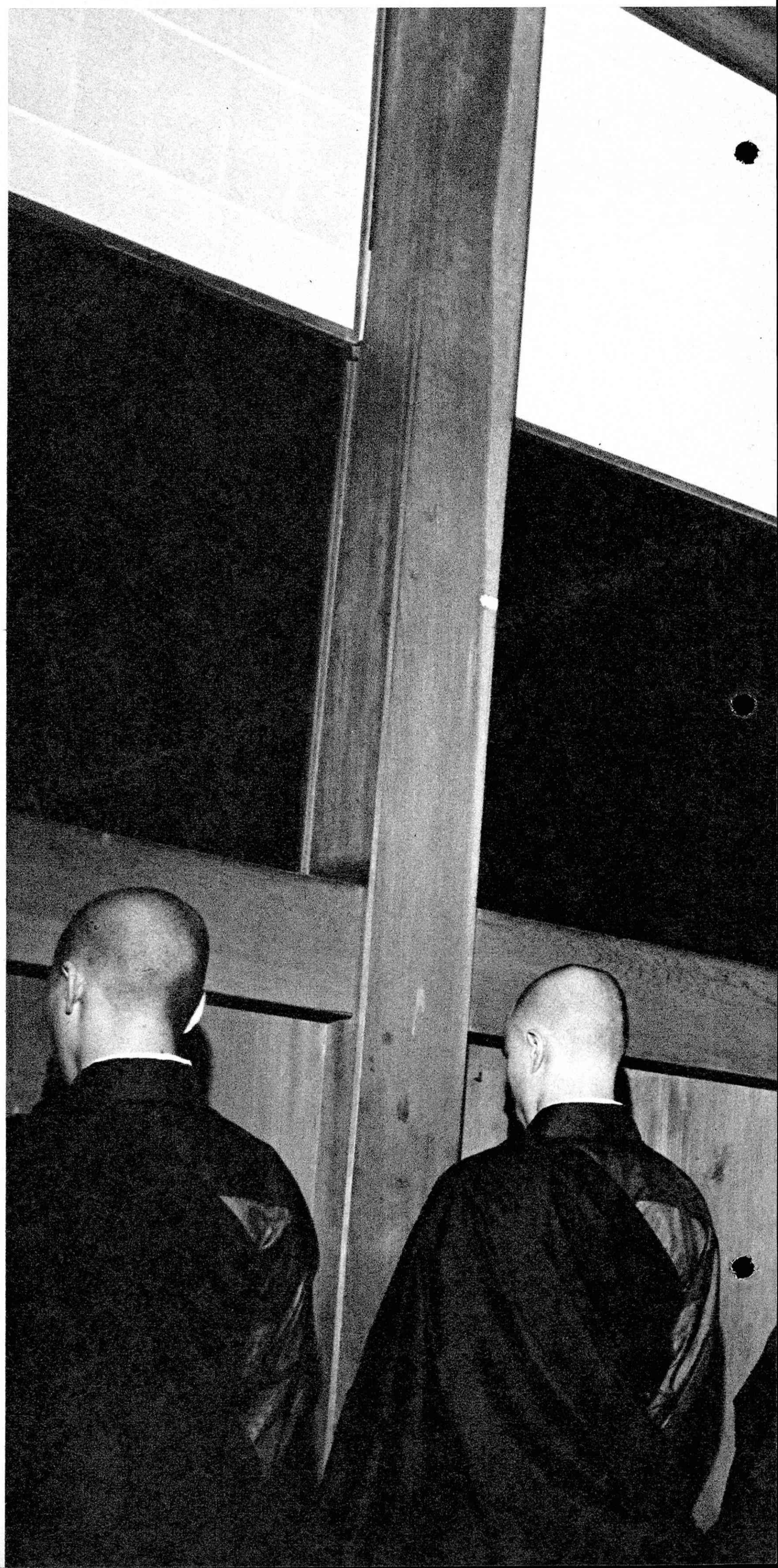
It is wrong to think that value objectively consists in matter itself. Value is born only when one finds it in matter. When one has a specific purpose in mind, one considers the utility of the matter, and its value is thus born. The value thus discovered is of material value and so, has an exchange value. Then what finds such value? It is, needless to say, a human being. Then what is the value of such a human being? It is an absolute value, since the human being is the very creator of value.

It goes without saying that in order to improve man's life, it is necessary to find material value and enrich his life. But this is done by natural science.

The values discovered through spiritual



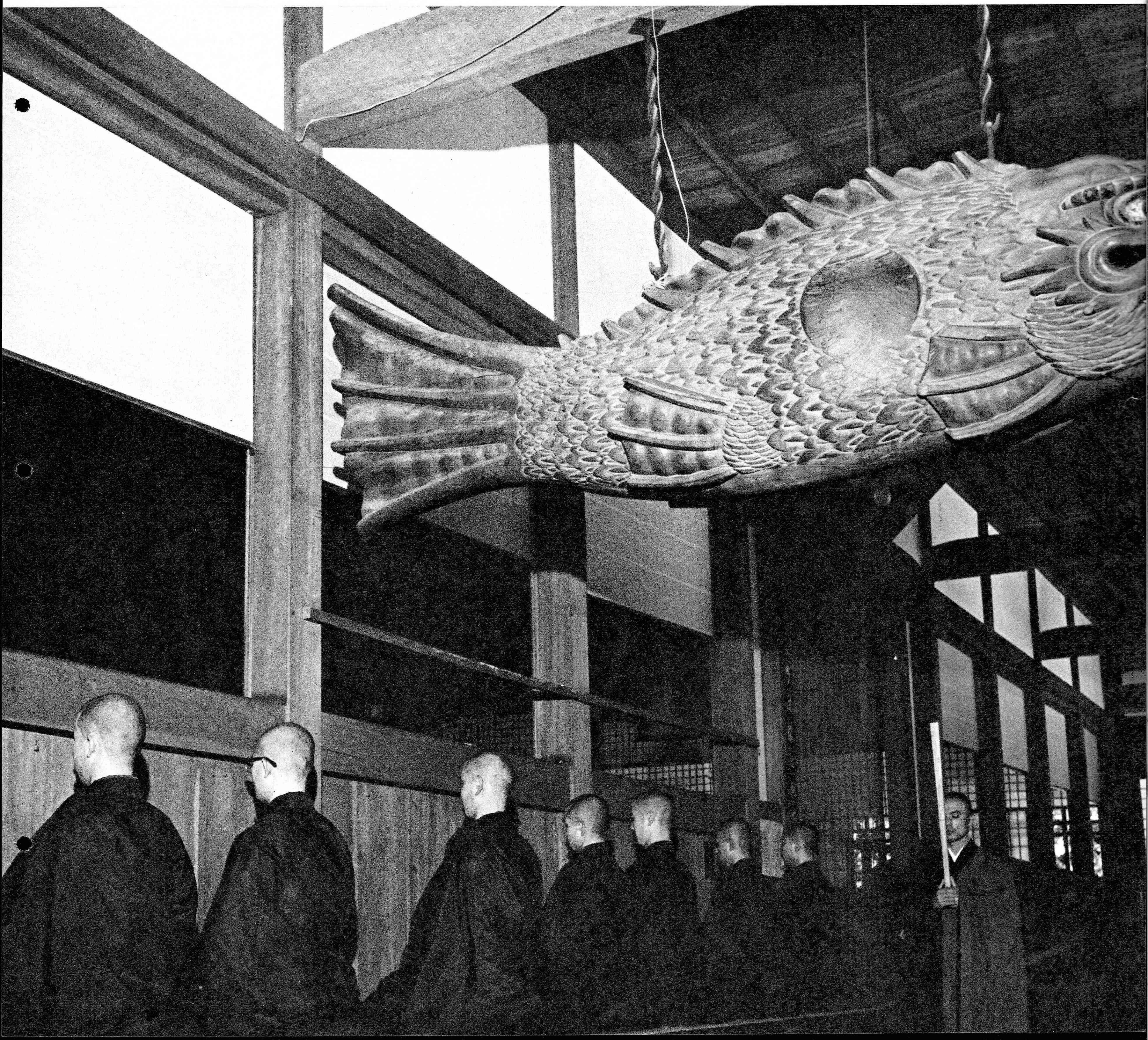
When a practicing monk's mind is disturbed during "zazen," it promptly shows itself in his posture. Therefore, an instructor monk hits his shoulder with a stick called "kyosaku" by way of admonition.

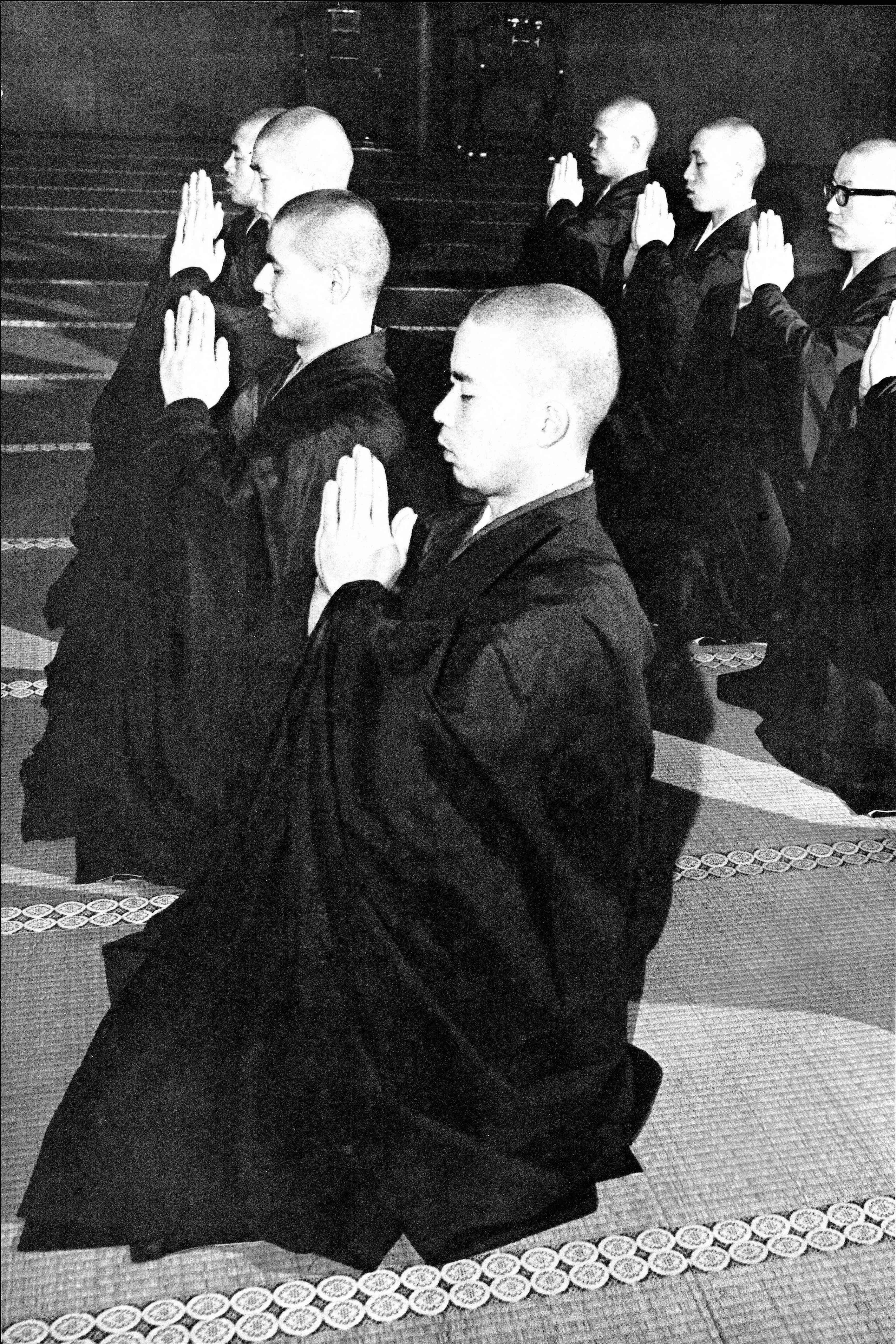


science are "truth, good and beauty." Truth is sought on the basis of the consciousness of falsehood while good proceeds from the awareness of badness and beauty from the consciousness of ugliness. Falsehood, badness and ugliness are realized through man's soul-searching. Accordingly, Dogen calls for a wholesale introspection through umbilicular contemplation. For self-consciousness is possible only when one asks oneself what he is, and thus when one takes a close look at one's self.

Man has so far evolved his culture while always looking at the outside world beyond the self. As the outside world is limitless, so is the inside world of on's self. There is neithter the beginning nor the end when one engages in soul-searching. Endless self-examination prompted by one's worldly cares gives birth to boundless values. Moreover, these values are not exchange values but absolute values since they are the very values of one who creates them. That is why Dogen tells us to live with a full awareness of boundless value in our life of this very instant without thought of tomorrow. If today is for the sake of tomorrow, it becomes a means for an end and thus degenerates into exchange value. Dogen emphasizes that without spending this day as a means for tomorrow, we must fully aware that only this very instant is a true and absolute reality and we must spend our daily life in the spirit of "single-minded devotion to umbilicular contemplation."

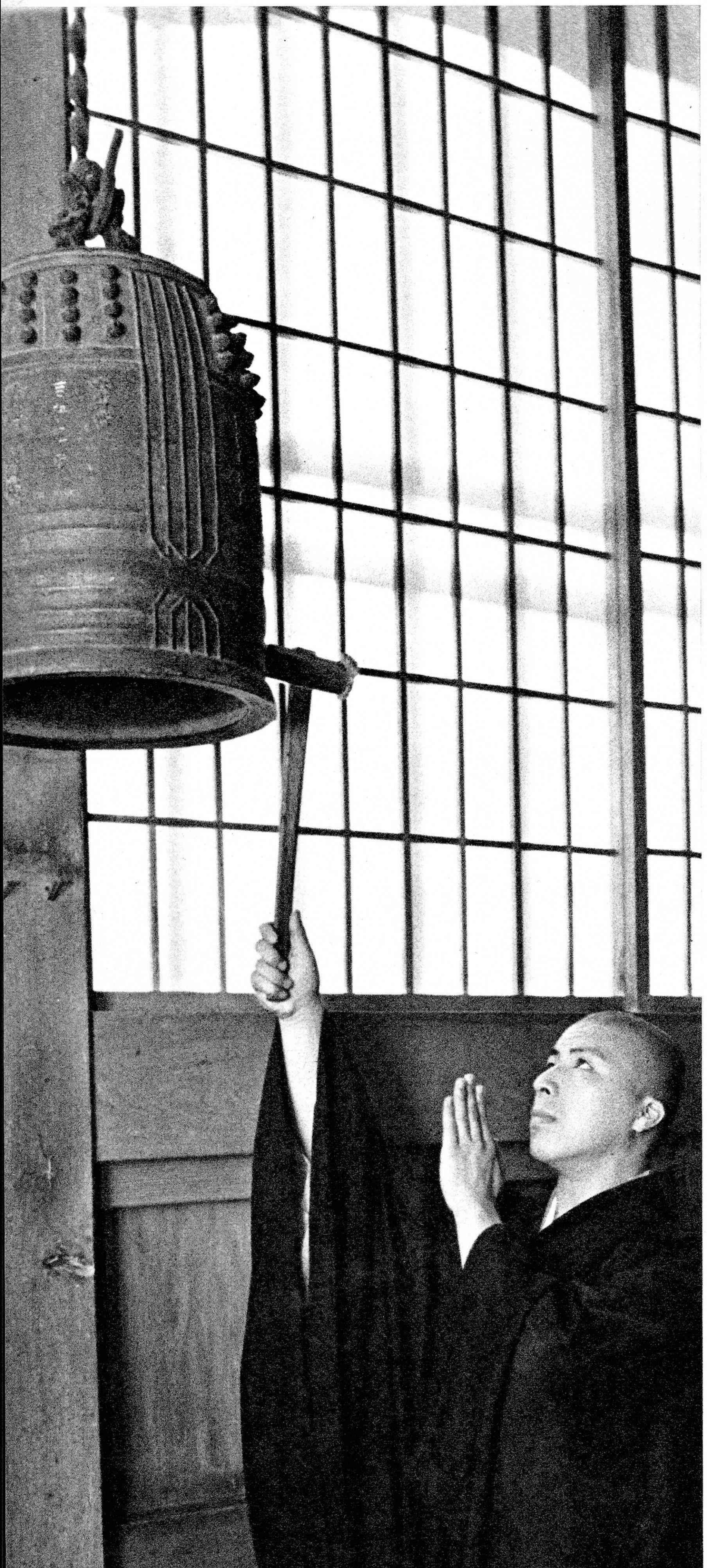
"Zazen" (umbilicular contemplation) by monks in the Monks Hall. They perform it three times a day—that is, for one hour each early in the morning, in the daytime and at night. Monks of Soto Sect face the wall in this training. Every act of a practicing monk is conditioned and developed by "zazen," which forms the quitessence of all forms of training. A fish-shaped wooden gong as seen in the photo is called "ho" and struck at meal time.

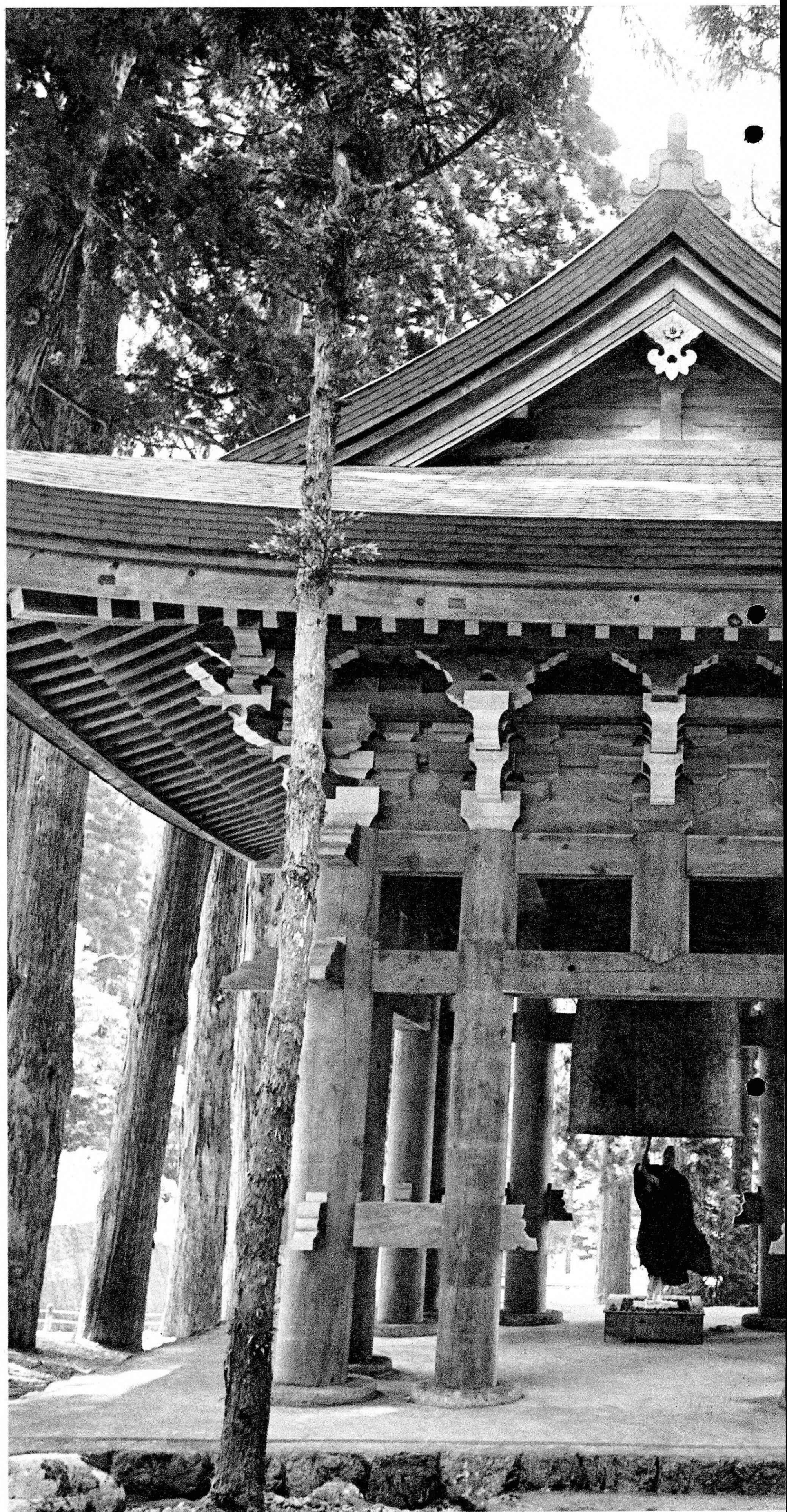




After the end of early-morning "zazen," sutra chanting practice takes place for more than an hour at the Main Hall. Monks engage in the practice, reading sutras sometimes (lower photo) and joining the flats of hands at other times (left photo). The chanting voices of many monks show a complete harmony, resounding sonorously through the hall. This cannot but arouse a pious feeling in the mind of one who listens, and makes one feel the essence of religion. The expression of chanting monks manifests a complete stability of mind.





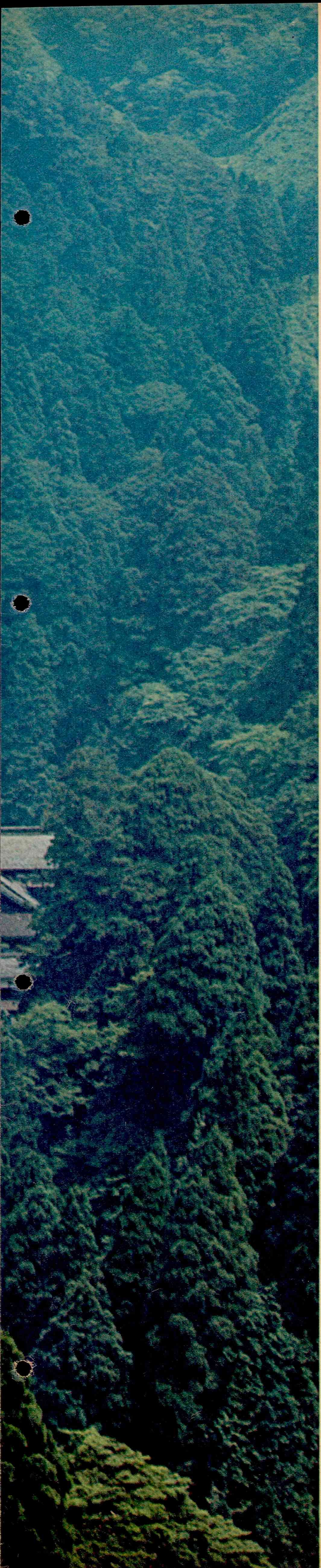


At the Eiheiji, all daily rituals and routines from morning till night are performed at the signal of various sounding instruments, such as temple bell, "densho" (small signal bell), "unpan" (cloud-shaped plate) and drum. Moreover, these instruments not only give signals, but also play the role of sounding lofty religious music with unfathomable tone.、 Therefore, the attitude of the sounding monk and the degree of his spiritual progress are directly reflected in the sound. Left: "Densho." Center: Temple bell. Right: "Unpan."



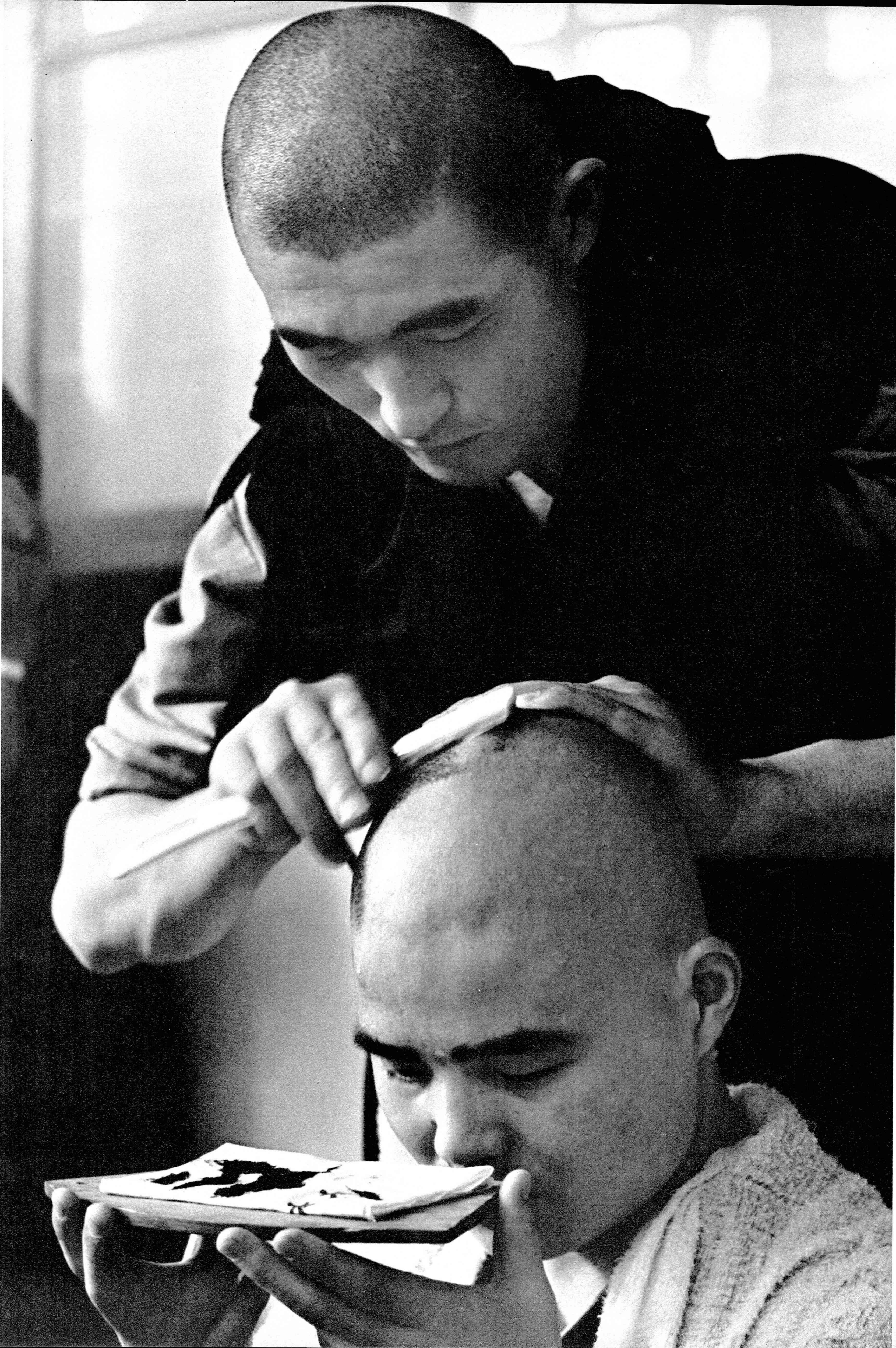






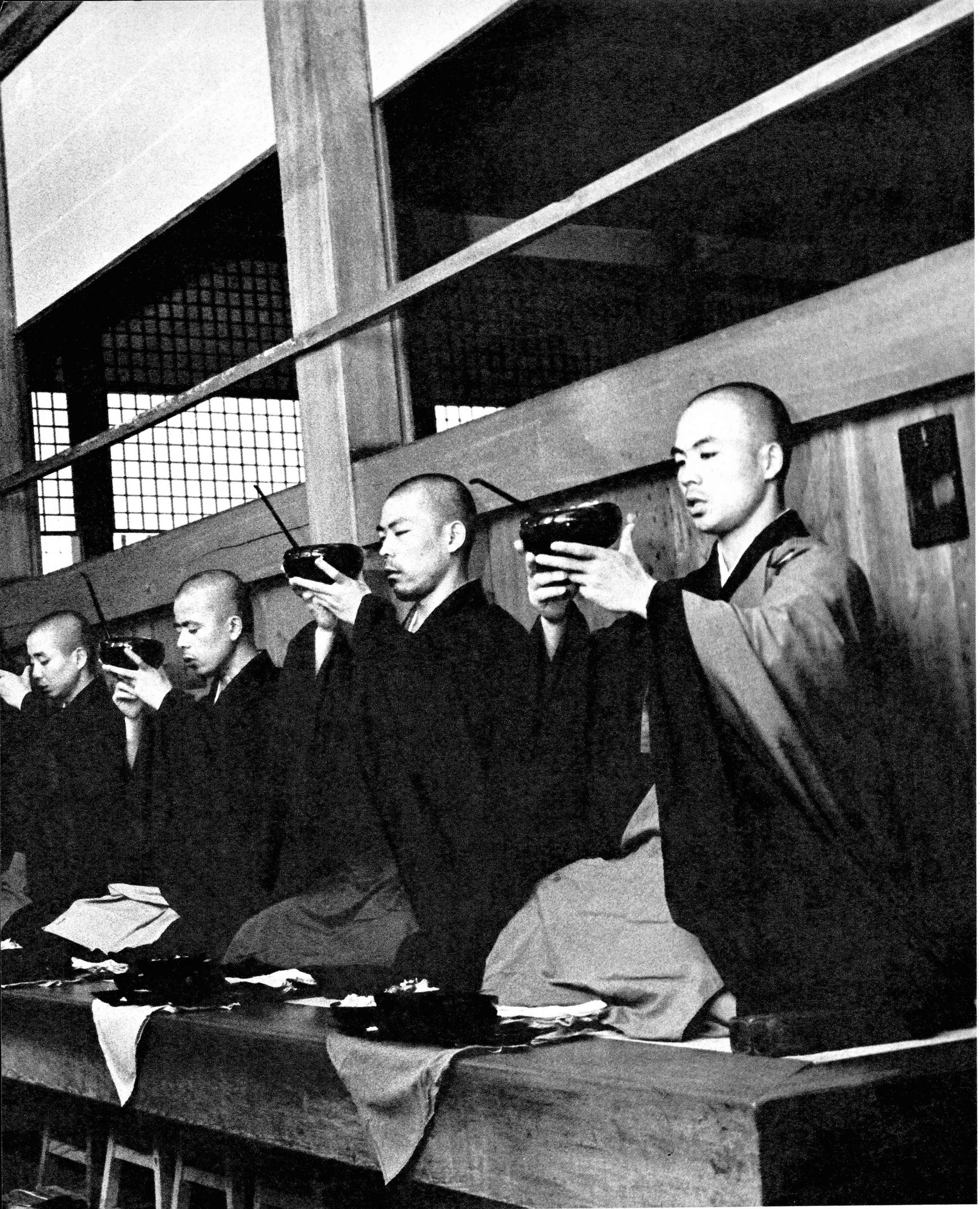


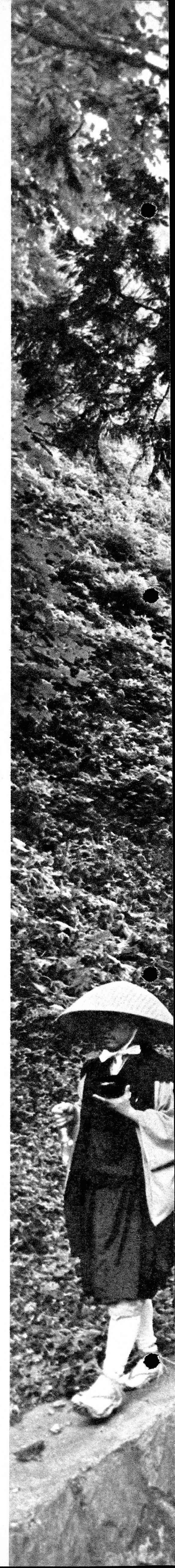
Left: Eiheiji Temple in the midst of a thick cedar forest, boasting a grand scale, which befits the biggest Zen sect temple in Japan. The temple is located in a really ideal environment as remote mountains far away from populated areas are considered the best place for Zen priests' self-training. Above: Part of the temple's precincts as viewed from the second floor of the Main Gate.





Left: Practicing monks have their heads shaven every five days starting on the fourth of every month—that is, the 4th, 9th, 14th, 19th, 24th and 29th day. They mutually perform the shaving in monks hall according to a rigorous time-honored method. Neither soap nor hot water is used, and the shaving is done only with cold water. It may be said that the head shaving signifies the observance of a monk's form, which in turn means the preservation of monk's spirit. Above: Practicing monks clean the corridor. "Zazen" is the core of self-training, but at the temple, particular stress is laid upon bringing the spirit of "zazen" into full play in every aspect of daily life. Therefore, cleaning of temple structures is also regarded as important training with the same value as that of "zazen."





Above: Prayers before meal. Eating meal is also one of important trainings, and an ancient etiquette handed down from the days of Dogen 750 years ago is strictly observed. Meals of Zen temples are very simple and monks never eat meat and fish. Meals are taken in the same hall where "zazen" is practiced. Right: Monks going out "takuhatsu" (alms-begging). With a begging bowl in hand, practicing monks make the round of houses, chanting sutra, and receive alms, such as money and other things. Ancient monks engaged in no productive work whatsoever, kept off hunger through "takuhatsu" and devoted themselves solely to self-training. This tradition is observed even today. Through "takuhatsu," practicing monks acquire the self-confidence that they can devote themselves to religious activities in whatever rigorous circumstances they may find themselves.



GOOD DESIGN FOR BETTER LIVING

Text by YASUO YAMATO

Under the "Good Design" system established in 1957, the Ministry of International Trade and Industry (MITI) each year selects commodities superior in design and quality and recommends them as "Good Design" items. The chosen commodities bearing the "G" mark are sold overseas not to mention the domestic market.

The system is intended as a guide for the consumer for commodities which are very convenient, fully safe and beautiful in shape, and thus serve to add to the pleasure of daily life. That is, it is designed to render service to the consuming public. Another object is to commend the makers of excellent commodities by giving the "G" mark and thereby to stimulate their enthusiasm for improvement of design and development of new products.

Generally speaking, the "Good Design" system covers articles for use in daily life, which are roughly divided into appliances, furniture, sundry goods, pottery and curtains. Some 160 designers and commodity specialists closely examine products in their respective fields. Those commodities which have passed this examination are further tested for safety, durability and other quality factors at specialized inspection organizations, while design similarity is also checked by a specialized body. Finally after screening from a comprehensive point of view, the best commodities are chosen for the year's "G" mark designation. This year, 328 items (made by 99 companies) have been selected or 11.5 per cent of a total of 2,852 commodities included in applications for the "G" mark designation by 300 firms. The selection ratio is lower than the 13.6 per cent for last year. One of the reasons for such strict screening this year is that all the commodities showed general improvement in design, making it rather difficult to grade them. Moreover, the quality test was further strengthened to make sure that the consumer can use "G" mark goods without anxiety.

Now let us study the characteristics of representative commodities chosen in each commodity category. In the category of appliances, such audio apparatus as transistor radios and black-and-white television receivers are marked by the addition of clocks to give a new variation to their forms. Moreover, a color assortment, such as red, black, white, green and yellow, is given to plastic bodies to exude a sense of freshness.

As for stereo equipment, many of the "G" mark sets take advantage of the natural texture of wood for cabinets.

Regarding lighting fixtures, many desk lamps have superior designs to ensure greater utility since the consumer's requirements are clear. By contrast, it was regrettable that the designs of few hanging lamps gave full consideration to housing styles.

In the field of cameras, those with plastic bodies started to be produced in Japan several years ago. But it was not until very recently that Instamatic-type plastic cameras fit for mass production came to be marketed at low prices. Cameras of this category chosen for the "G" mark this year are characterized by pleasantly simple designs.

As for bicycles, many of those selected this year are designed for cycling excursion and show a high level of quality. Also conspicuous is the emergence of bicycles for shopping, reflecting the increased use of bicycles by housewives in giant housing complexes, which are mushrooming in Japan. In these circumstances, the designs of bicycles manifest an apparent shift of emphasis from recreation to practical use.

In the sphere of furniture, chests of drawers, desks, chairs and beds show a high level of workmanship, but few of them are of epochal or original designs. As for beds, their exterior designs seem mediocre at first glance. But considering that the use of beds is now recommended for improvement of the Japanese people's living, the designs of the selected ones are marked by beautiful simplicity and their workmanship is especially elaborate. They are certain to win favor among consumers.

Regarding the category of sundry goods, there are attractive cooking pots made by coating aluminum with synthetic resins to give an image similar to that of enameled iron pots. Their simple designs as well as vivid colors have caught on well with consumers.

Among various stoves, many of the kerosene ones show refined taste in both shape and coloring. Moreover, marked improvement is noted in safety and other features.

In the category of pottery, many tableware sets have been selected for their gorgeous beauty and fitness for the mode of life preferred by the public.

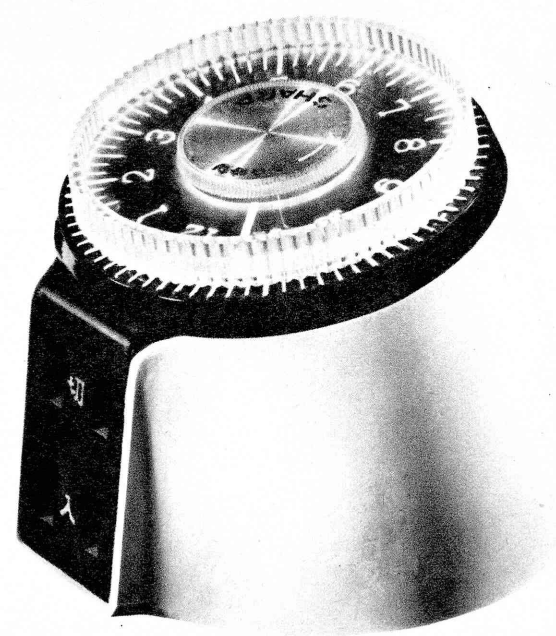
In addition, many items of chinaware, which represent the re-development of Japan's time-honored folk art with a fresh sense of the 1970's, have been chosen to the delight of the consumer.

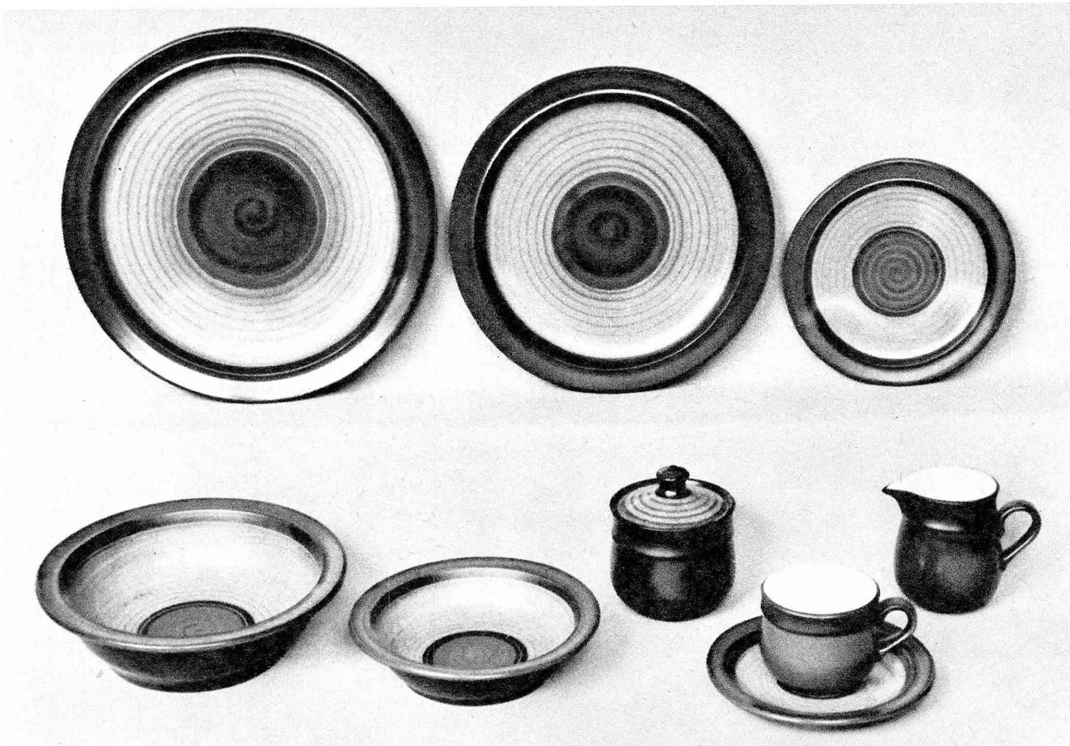
Curtains, casement and lace cloths selected this year are for the most part marked by multipurpose designs reflecting the trend of diversification and sophistication in the housing environment in recent years. Regarding colors, they generally feature bright patterns, especially vertical stripes.



Left: A small-sized television receiver with a built-in clock, one of various TV sets using plastic cases of novel design and in attractive colors, which have recently been put on sale as second television receivers for home. (Sharp Corp. ¥49,000). Below left: This is one of the four desk lamps chosen from among 123 lamps tested, for their great utility and fitness for Japanese homes. (Matsushita Electric Industrial Co. ¥3,480). Below right: This time-switch is small and can be directly connected with outlet. So there is no need to worry about where to place it. (Sharp Corp. ¥1,500).





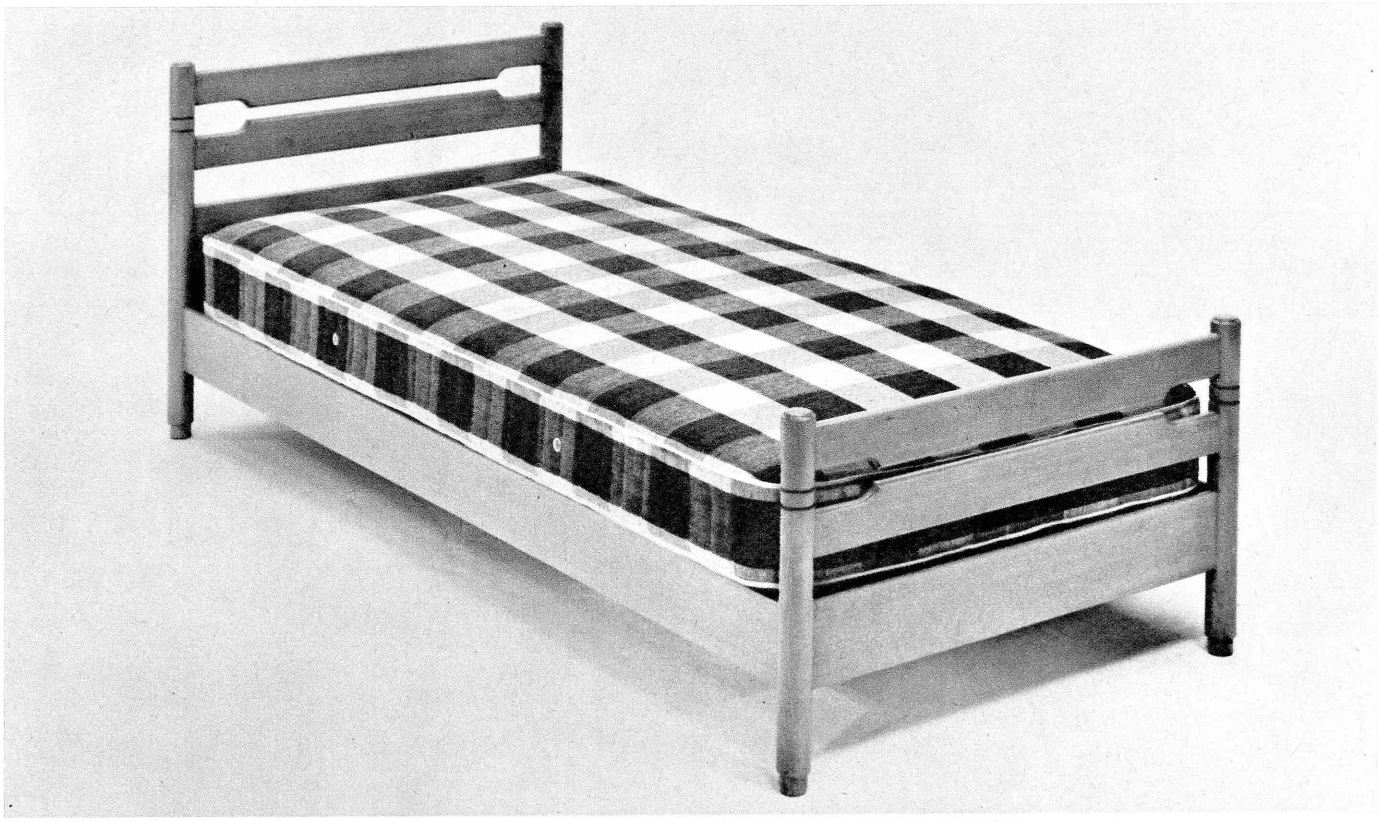


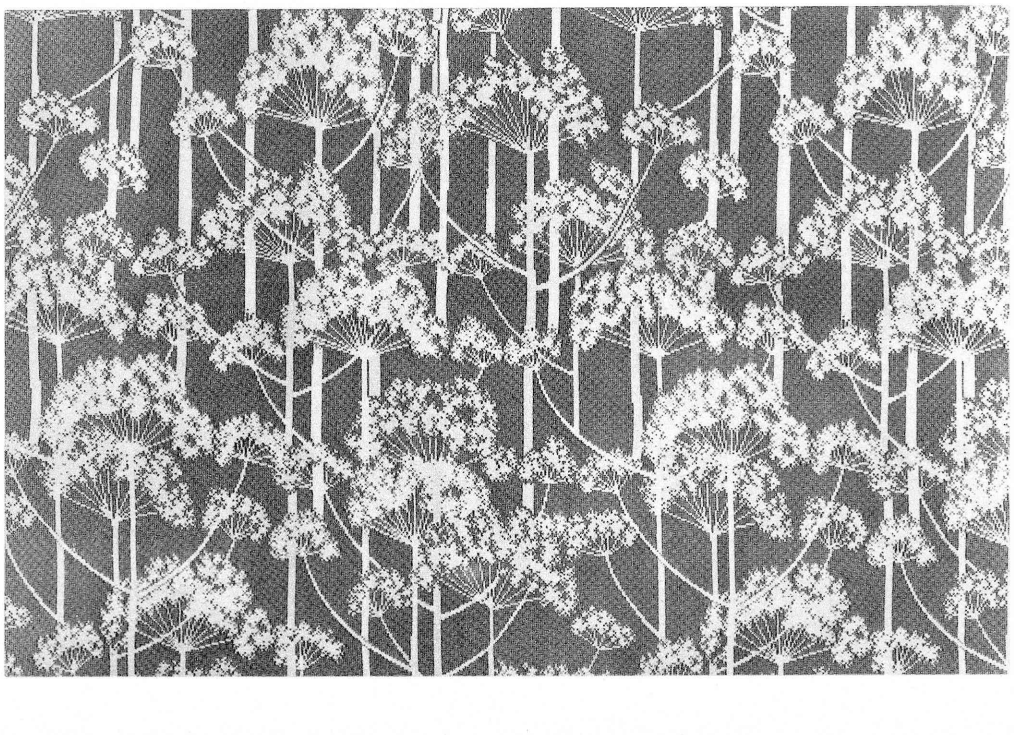


Top: This dinner set is marked by a quite tone of Japanese folk art, created by dark brown glaze. (Koyo Tokı Co. ¥16,200). Middle: These shallow pots (22 cm) are made by coating aluminum with synthetic resin through the backing finish method in order to make them look like enameled iron pots. Lids are available in red, blue and yellow. (Hokusei Aluminum Co. ¥2,100). Bottom: This kettle (capacity: 3 liters) features various innovations. For instance, it has no large inlet at the center unlike the conventional type, and water is poured in through the spout (outlet). Moreover, when water boils, a whistle attached to the lid of the spout is sounded by steam. When water is filled or poured, the lid separates and attaches to a magnet on the handle by pressing a lever. (Cook Vessel Co. ¥1,980).









Top: This bicycle with a shopping basket attached is designed for housewives unlike the many thin-pipe models for leisure. The wheels are small but have thick tires. The height of the seat is adjustable. (Maruishi Bicycle Co. ¥22,000). Middle: This bed features a marked improvement in the cushion structure. Usually, beds are made by putting mattress on a wooden lattice beadstead. This new bed uses plywood instead of ordinary wood. Both ends of the lattice beadstead are fixed with rubber which matches the mattress in order to triple resilience of the bed. (France Bed Co. ¥43,800). Bottom: A curtain cloth made by weaving white flower patterns with rayon yarns on polyester fabrics. The texture is so constituted as to prevent shrinking due to washing. (Kanesaka Shoji Co. ¥390 per meter).

JAPAN ALPS IN LATE AUTUMN

Tinted Foliage and Fresh Snow



Late autumn—
a season when the peaks of the Japan Alps
look particularly beautiful.
Scarlet leaves of alpine plants,
rocky mountains shining with fresh snow,
clear blue sky—
here is a marvelous assortment of colors
created by Mother Nature.
Rows of climbers converging on peaks
are no longer to be seen,
while mountain huts are tightly closed
to provide against the onslaught of General Winter.
Tranquility and rigor of nature
now rule the peaks.
The sound of climbers' piton hammer
occasionally echoing against rocks
make the tranquility all the more impressive.

Japan Alps consist of ranges of mountains about 3,000 meters above the sea level lying in the central part of Honshu. They are made up of Northern Alps, Central Alps and Southern Alps. Called the "Roof of Japan," the ranges include all the nation's high peaks more than 3,000 meters above the sea with the sole exception of Mt. Fuji. Right photo shows the perpendicular rocky wall of Taki-tani in Northern Alps. It is the most forbidding mountain wall in Japan that requires the most advanced rock-climbing techniques. P. 30-31: Mt. Hoken of Central Alps in late October. "Mountain ash" with tinted foliage and a whitish rocky surface present a striking contrast.

Photos by courtesy of the Alpine Calendar





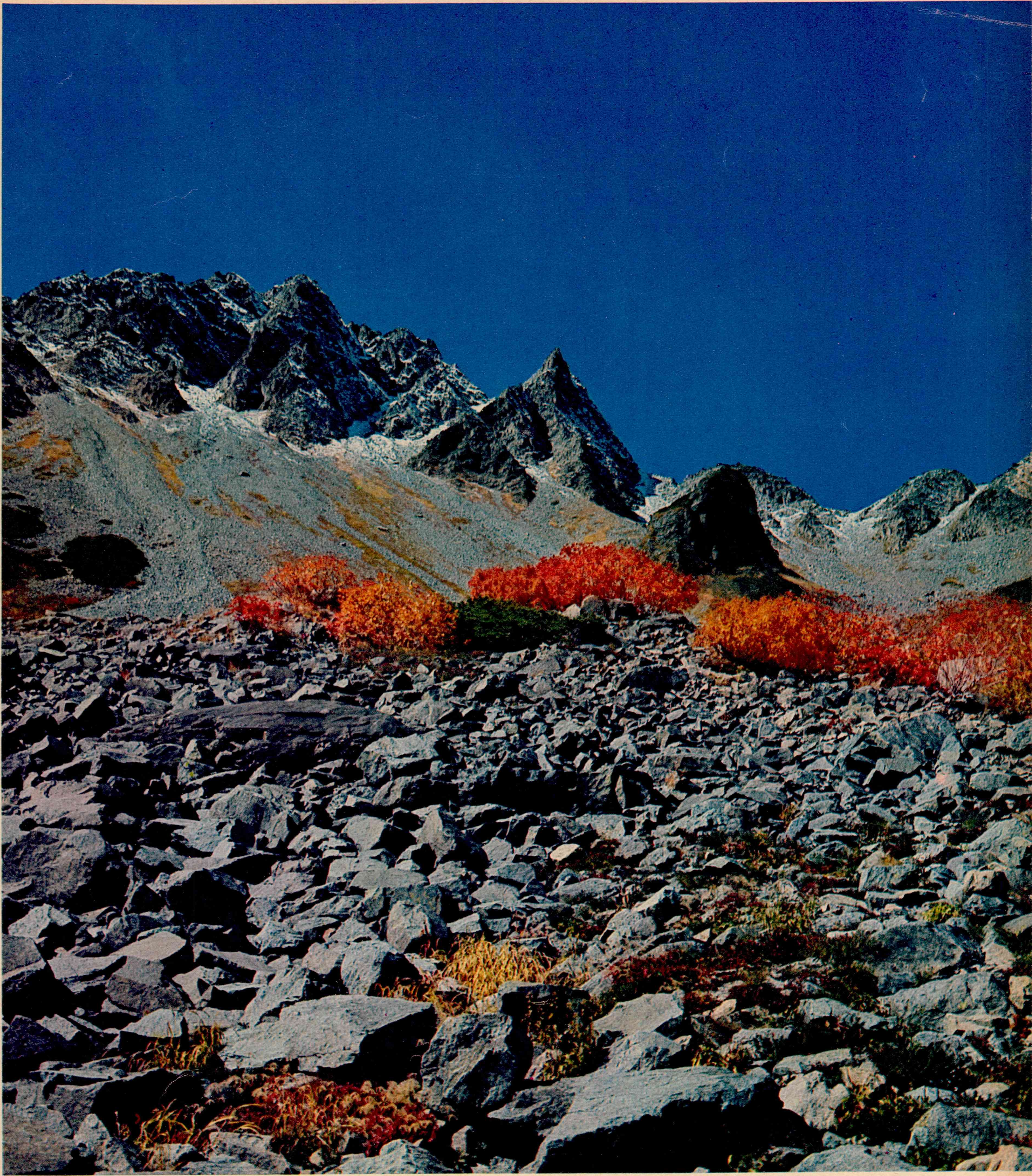




Tsurugi Range in early November as viewed from the air.







Left: Karasawa Valley and the ridge of the Hotaka Range. Above: Ikeno Taira aflame with autumnal tints and the rocky ridge of Mt. Tsurugi.



The Ushiro-Tateyama Range of Northern Alps. With the advent of November, the mountains are covered with snow all over. (Photo by Kiyoto Matsuzawa).

OLD ROADS TO NEW JAPAN

Photos and text by JOHN LOW

WE drove from Kyoto to Tokyo, from ancient to modern capitals, from city of lanterns, temples, and gardens to city of computers, office buildings, and factories. By touring where old Japan is strongest—in the countryside and in the old towns—we hoped to see industries in the midst of change from cottage to factory, from hand to machine. We went to meet the people who have made Japan the world's third most powerful economic force.



My wife Teruko and the children join me in studying the map before departure. Maria, 3, sits by her mother's knee while Michael, 5, shows his sister the roads we expect to take.

The four of us, my wife, two small children, and I left Kyoto in pouring rain and drove north along Lake Biwa's western shore. The rain let up as we crossed the hump between Biwa and the Japan Sea. We went down to Honshu's north shore, the lee side for the summer monsoon rains.

Our first stop was a little past Tsuruga. We looked over rice paddies, almost every one with at least one farmer bending over laboriously weeding the new shoots. It was old Japan, rice economy Japan. We had stopped by the side of a toll road bypassing some difficult coastline. Below us the narrow old road wound through hamlets and paddies.

In Takefu we visited a cooperative where families continue a 650 years old tradition of



One of our campsites. Of our eighteen nights on old roads to new Japan, we slept in inns two nights, over a grocery shop another, in a private home once, and the other fourteen camping. We usually managed to find woods surrounded, river side sites like the one illustrated.



steel work. Three hundred and twenty employees working for 170 firms make knives of all shapes and sizes. Blackened, tireless men shaped sickle blades and kitchen knives. They had replaced their blacksmiths' hammers with power hummers and the stones' hand cranks with electric motors.

From Takefu we drove inland and met men like Mr. Kinji Nohara. An old man now, when a young man he spent ten years in Tokyo learning the bamboo basket weaver's art. He returned to the country and taught several hundred destitute peasants how to earn decent livings. Now his firm ships bamboo baskets worldwide. Around the corner is a stone monument the peasants built to honor him.

We followed highway eight up to Kanazawa where we visited the shop called Uesaka. Mr. Uesaka began working with wood thirty-five years ago. Now he employs about twenty making vases, ashtrays, and miniature drawer sets. His lathemen and any who use knives in his shop insist on doing their own blacksmithing.

In the evening of our first day visiting Kanazawa we were looking for a campsite by the Sai River when we met a farming couple.

"What are you doing?" asked the woman.

"Travelling to see Japan," replied my wife. "Do you work late?"

"We work here after work until the sun goes down. Through the day we both work full-time in factories. Our farmers' lot is to work. But we have this field!"

"Tomorrow is Sunday. Surely you'll rest?"

"Oh no," replied the woman, "tomorrow we get up at 4:00—the time we get up everyday



Above: In Kanazawa, Ishikawa Prefecture, a Kutani ware potter measures a cup it took a few moments to shape. When he has shaped the cup perfectly he will use a thin string to cut the cup off the spinning clay tower. Right: A Takefu private steel worker stretching himself over a great spinning stone, puts on edge over a blade.

to come to the field before work—to go to our bamboo grove. It needs fertilizing."

During the conversation, her husband did not once raise himself up from his weeding. I never saw his face.

Two old industries Kanazawa has a particular reputation for are Kaga Yuzen or silk dyeing and Kutani porcelain ware. We visited a cooperative silk dyeing plant and one of the Kutani potteries.

Kaga Yuzen is a resist dyeing process. The patterns are starched dyes painted on silk cloth. The workers in the plant we visited limit themselves to stencil patterns, most requiring five or six stencils. The more elaborate use up to twenty. We watched workers paint whole cloth lengths with a final light beige dye that would appear the cloth's basic color. Onto the beige coating they scattered sawdust and then racked the looped cloth into steamers, heavy wooden boxes looking like small houses. The sawdust was to keep the loops from sticking to one another; the steam was to fix the colors. The last step before final drying was washing.

Until recently, all the dyers used the Asano River flowing through Kanazawa. But with the upstream population growing, better drainage in the countryside, and industry the river became smaller and dirty. The dyers were finding so few good washing days that many had to do night work.

So fourteen of the dyeing families built a cooperative plant. They dug a 120 meter well from which they get a steady, clean stream. Through one great hall they have a river.

Kaga Yuzen silk dyers near Kanazawa wash stencil dyed, silk kimono lengths in their artificial river. Fourteen dyeing families recently formed the cooperative enterprise when the river they had used became unuseable because of growing industries.





When we visited in June the dyers had only just moved in. Each family had its appointed place for its specialty. As they masetr their new equipment and organization, they told us, they plan to hire labor for some of the heavy work.

I asked one dyer stepping out of the river if his wife had many kimonos. "No, she doesn't," he replied. "I don't know how people can spend ¥30,000 to ¥40,000 on a kimono. But when people can spend that much, it must mean Japan is wealthy. But I'm not poor either. We can sell all we make. Occasionally, though, my wife wears one. But it's always a defect.'

In the Kutani porcelain plant too, people worked at specialties. Two potters spent years before two wheels. Others watched the first backing at 800°C. Others added the first glaze. Others loaded, watched, and unloaded kilns. Masters of years experience assisted by young women applied the patterns. They painted the glaze patterns after the main baking, rather than before as is the usual method. Patterned Kutani ware feels embossed.

At the end of each day's touring and visiting in and about Kanazawa we returned to our riverside campsite. The children frolicked in the river. My wife tried fishing. I kept the campfire burning. Thousands of frogs in the riverside grass croaked us to sleep while the fireflies danced in the night.

Then we swung south down route 156 into the Shirakawa Valley. Dam after dam after dam. The mountain drives south and then east to Matsumoto were a succession of power dams and roads forced up mountain sides to make way for man-made lakes. Between one dam's lake and the next dam were hardly, it seemed, more than a few hundred meters of unimpeded river.

Everywhere we met road construction. More than once we had to take a mountain trail detour to avoid long delays waiting for construction crews to open roads. Even in our Shirakawa Valley campsite beside a rushing, tumbling, mountain stream falling off Mount Hakusan's face we could hear the frequent rumble of construction trucks.

Looking down on the south and of Suganuma village beside the Sho River in the Shirakawa Valley. The valley, running north and south to the east of Mt. Hakusan National Park, is the only place in Japan having the "Gassho-zukuri" thatch roofed houses.

Seaming to be throwing up a never ending stream of chairs, a woman worker in Takayama's Hida Sangyo attaches assembled chairs to an overhead conveyer which will carry the chairs to staining halls. Chairs for export (50% of the firms business) go out as pieces in crates to be assembled abroad.



TAKAYAMA has a just reputation for the quiet attractiveness of its traditional ways. Drivers are patient. Pedestrians smile. Many bicycles mingle easily with cars and trucks. The quality of the city's arts and crafts, notably its lacquer ware and wood carving, enhance its reputation. Takayama is the central city of the old province of Hida, sometimes called the roof of Japan because of its altitude and mountain encirclement. Its climate is like northern Europe. Its forest are full of beach trees, an excellent wood for furniture. Hida has a fine wood-working tradition 1,000 years old.

Some artists continue in the tradition and carve Noh masks. Others carve tourist trinkets. Some have transformed their tradition into a contemporary industry, furniture making.

Hida Sangyo, a furniture company, is now Takayama's largest single employer with a work force of over 600 in a city not 100 times that size. The firm began in 1920. By 1924 it was exporting to Asian countries and in 1935 began exporting to North America.

We saw every job reduced to its fundamentals and if at all possible mechanized. Rubber cups captured chair seats. A push on a button drilled simultaneously all the holes needed for chair back members. Overhead hook lines dangled chairs from one work station to the next. Men used air powered staple guns to fix steam softened plastic covers to seats.

In one building groups of thoughtful men circled new furniture designs, pulling them, pushing them, kicking them, sitting in them, testing them for every possible weakness.

In the early afternoon soon after leaving Takayama for Matsumoto, we ran into a sign telling us no traffic could go through until 5:00. That would have meant mountain driving in gathering dusk. We backtracked a few kilometers and, as was our custom, took the first turn-off leading to a river. By taking successively smaller roads, always toward the river, we found our dead-end campsite. The river was a clear mountain stream, slow enough to be safe for the swimming children and fast enough to sparkle. The site was level; sleeping on the ground was not a bone vs. rock and hip vs. hump contest.

Next morning, after driving through the construction, and an hour or two before lunchtime at the top of the last hump of the Takayama-Matsumoto road, we learned—or suspect we learned—that not all the enterprise we saw on our drive was laudable. At the hump's top was a small souvenir shop and snack stand. Just past the shop was a barrier. No signs. Nothing to say when the barrier would open. More road construction? "When can we go through?" we asked the shopman.

"In about an hour from now, I think. I heard someone will come about then."

Not needing anything from his shop and



Inside one of Takayama's folkcraft museums. The building became a museum five years ago after almost a century of being the private house of the Kusakabe's, one of Takayama's leading families. The wood used throughout was the very best available in Hida region, a province famous for the quality of its wood and carpenters.



loathe to sit forlornly before the barrier, we reversed to a more comfortable spot a hundred meters back.

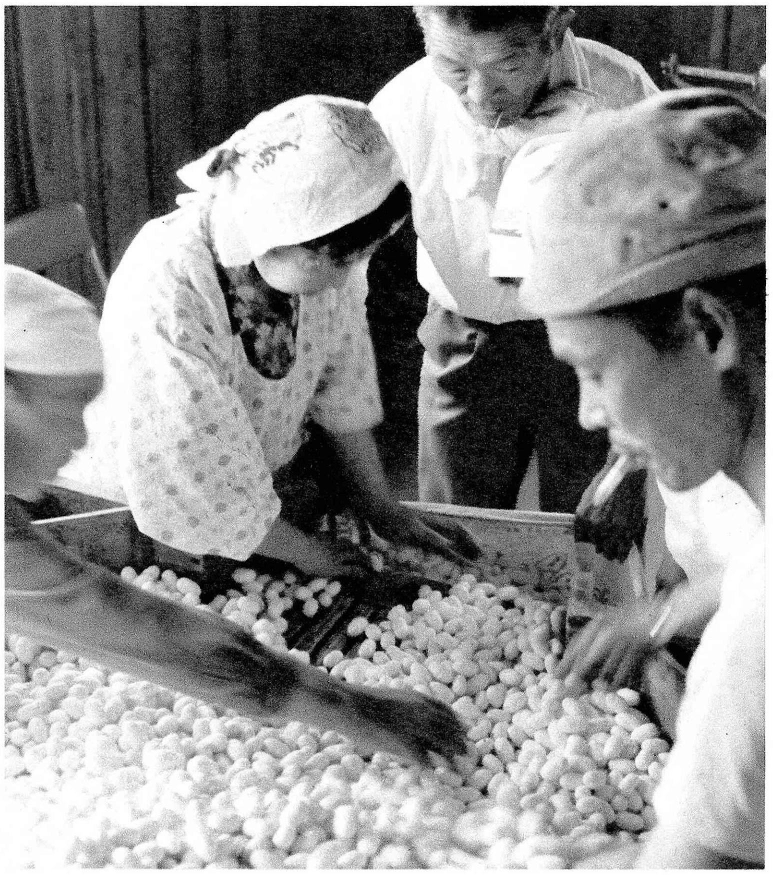
Then an express company truck came up from the Matsumoto way, stopped a moment, and continued on past us. Ten minutes later a car did the same.

We drove back. The barrier was closed. But neither the truck nor the car had stopped a second time for the driver to close it. We opened it ourselves and drove on. We did not bother to close it behind us.

MATSUMOTO has another traditional industry in transition, the silk industry. Before the war one in every ten Japanese farming families did sericulture. Next to rice itself, sericulture was the countryside's most important industry. But the work was tedious. The pay was small. Then came manmade fibers and women no longer wore silk stockings.



Above: Cocoons in the making. Some silk worms, over half their weight silk glands, look for places. One worm has begun weaving floss, the preliminary suspending framework. Two worms have almost hidden themselves in cocoons. Two in the upper left appear to be moving into the same slot. Their cocoons, if they make them together will be useless — impossible to unwind. Below: Silk farmers near Okaya check cocoons in their cooperative marketing center. They are looking for double cocoons or signs of worm eating their way out.



Now the industry booms. Japan alone, for kimonos and obis and other silk goods, requires 25,000,000 kgs. of silk a year but produces only 22,000,000 kgs. The difference comes mainly from Korea with a little from Italy.

In Matsumoto we visited a government experimental station for improving silk yield and experimenting with ways to increase yield from the now 20% useable silk per cocoon. The yield used to be, and still is for the imports, 12%.

The smaller city of Okaya, further along our route, is Japan's silk thread spinning center. What must have been in the old days a laboriously slow process of unwinding cocoons and spinning thread was, in the plant we visited, reduced to banks of near automatic machinery.

The cocoons entered to be dried and stored for use when needed. When needed they were first boiled to dissolve the glue reinforcing. Then one machine removed the loose threads of floss around the cocoons, unwound thousands of cocoons simultaneously, and spun threads of ten strands each.

In other rooms women working in concert with machines turned the rolls of thread into skeins, looped the skeins for easy handling, graded the silk for luster, and packed it in bales.

We asked Mr. Sakurai of the experimental institute in Matsumoto if people in the silk industry lived in daily fear of someone inventing a chemical fiber matching silk's beauty. "No," he replied, "we are not afraid. With our work here and the work of others like us, we are steadily reducing sericulture's labor requirements. We thereby both keep prices down and replace with machinery the sericulture farmers who every year get fewer. They don't like the tedious work. Fact is, the nation's silk wants are growing exactly as fast as the nation's wealth, the proliferation of man-made fibers notwithstanding."

Our last road to Tokyo was the old Nakasendo, now called route 142. Feudal lords and their retinues from the provinces we had passed through had used the road on their regular trips to Tokyo. The road left Lake Suwa's valley on worn cobble-stones. It wound up through the old part of Shimosuwa town and then pushed up into the last mountainous humps before a gradual descent to Tokyo.

Our journey had taken us through Japan's back country, a country knowledgeable of its history and wishing to preserve it. We think of Kanazawa and Takayama. A country alive to contemporary life and industry. We think of the new silk dyeing cooperative and Takayama furniture. A country of people willing and able to contribute work and well-being to their fellows. We think of Mr. Nohara farming out his bamboo weaving. Above all, a country filled with people willing to work. We remember especially the peasant couple in their field outside Kanazawa.

SUMI HANAYAGI
Young Leader of Japanese Dancing



Sumi Hanayagi trains herself as dancer and choreographer day in and day out.

Photographed by MICHIO NOGUCHI

"While performing classic dances in an orthodox way, I wish to create *new* arrangements," said Miss Sumi Hanayagi (born in 1941), a young dancer of the Hanayagi school, and known for her energetic devotion to dancing and on whom her seniors place great expectations.

In 1969, she announced the new dance creations—"Kudara Kannon" and "Koma Shika"—Japanese dances performed to the accompaniment of Western-style music, for the first time and received the Education Minister's New Star Prize, thus coming into the limelight as a young dancer-choreographer. On that occasion, she keenly felt the delight of creation and at the same time, was struck with a sense of awe when she thought afresh of the gravity of creation.

"Creation," she says, "to take over and perform classic dances correctly and moreover, to make one's dancing surpass the usually accepted standards—that is, to add to the dances something that can be expressed by oneself alone. This also leads to the so-called *new dances.* I don't think a simple adoption of Western-style music or Western dancing patterns alone could create *new dances*." This is her faith about the art of dancing.

Sumi Hanayagi was born to a family of noted dancers. Her grandmother and mother, also using the name of Sumi, were renowned dancing mistresses. That is, she is Sumi Hanayagi III. In her childhood, she was trained as child actress by Onoe Kikugoro VI, a famous Kabuki actor also known for his great dancing skill. This laid the foundation of her dancing art. After a cheerful childhood, she crossed over to the United States at the age of 17 and studied modern ballet for about two years. After returning home, she made up her mind to live as a Japanese-style dancer.

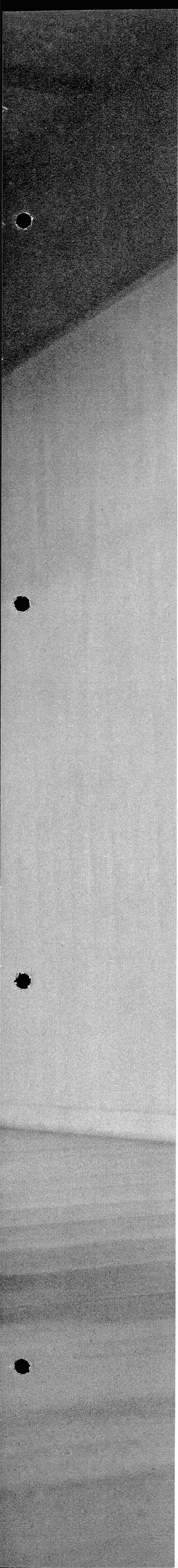
At her home, there is a 40-square-meter training hall with a stage, where she not only teaches pupils as a leader of Japanese dancing, but also trains herself as dancer and choreographer day in and day out.

She is of rather small build, and exudes the traditional charm of Japanese womanhood. But she also has inner strength like a young bamboo, which is elastic enough to put up with a heavy pile of snow on its branches. Such character is vividly reflected in her dancing art. Her repertory of dances is so broad as to cover the field of male dancers as well. At present, she is particularly popular for her male-style dancing.

Miss Tokuho Azuma, her dancing mistress and one of Japan's top female dancers, places great expectations on Miss Hanayagi, saying: "She is a really skilful dancer for her age. What I hope now is that she will continue dancing and dancing so that she may become able to perform beautiful and unique dances which nobody else can accomplish in the sphere of female dancing. Only then will she become a really great head of the Hanayagi school and also a key pillar for the future of Japanese dancing."







Sumi Hanayagi gives daily lessons not only to prospective dancers but also to women in general. The dancing practice serves to make a womans' movement in daily life graceful. That is why many Japanese women learn traditonal dancing.

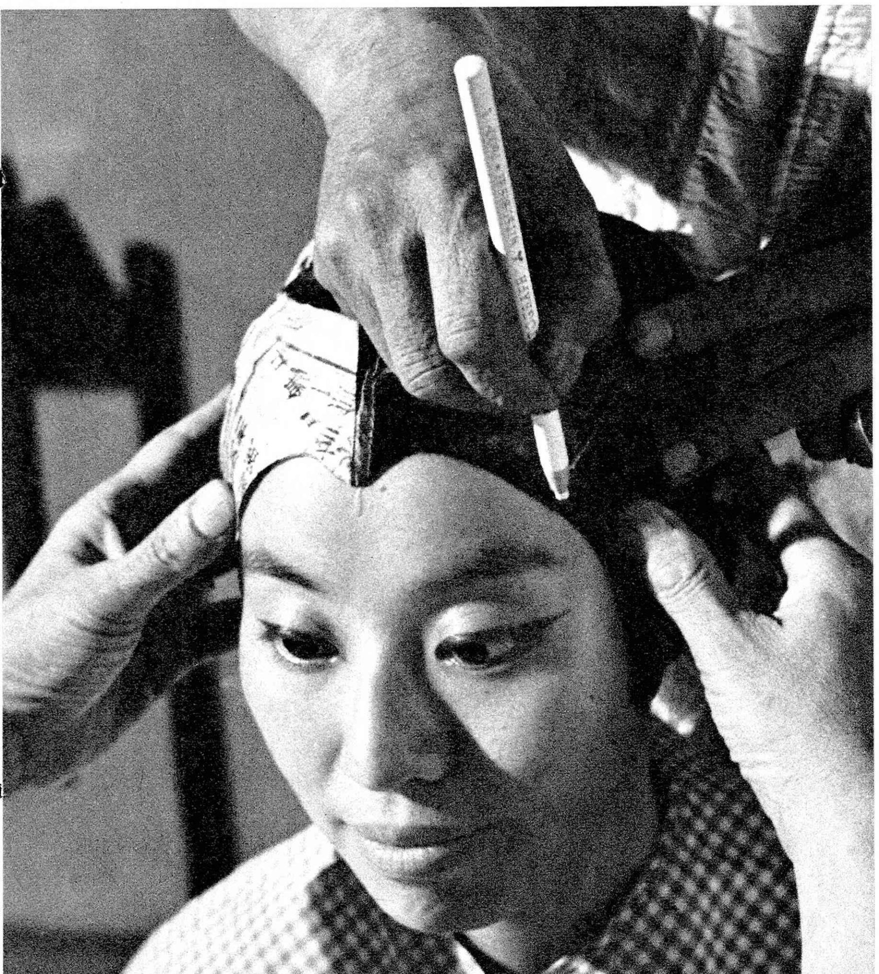


Usually, "Fuji Musume" is performed by a single dancer, but sometimes, as shown in the right photo, three girls dance it together, making the dance all the more brilliant. The above photo shows Sumi Hanayagi performing "Fuji Musume" with a wistaria-costume on.









When she formally performs on a stage, she wears a special makeup by using traditional liquid face-paint, ink and rouge, in the same way as do. Kabuki actors.

Education in the 1970's (Part 1)

STUDENTS AND TEACHING MACHINES

Before the start of a lesson, students check cassette tape recorders during recess, while the teacher adjusts the switches of a simplified language device. Machines have thus been introduced even into classrooms, and teaching with their aid has begun to take widespread root in Japanese education.

The Education Ministry designated many schools throughout the country in fiscal 1969 for experimental use of teaching machines. The purpose is not only to improve teaching methods, individualize the teacher's guidance and enhance the efficiency of lessons, but also to systematize instruction and study in classrooms.

The 6th Omori Middle School (14 classes with a total enrollment of 566 students), one of the ministry-designated schools, is using group response analyzers, video tape recorders (VTR), over head projectors (OHP) and other devices, leased by the ministry, for English and mathematics. This school is known for its effective use of audio-visual devices in classrooms, and the addition of the new machines is further raising the efficiency of classroom lessons.

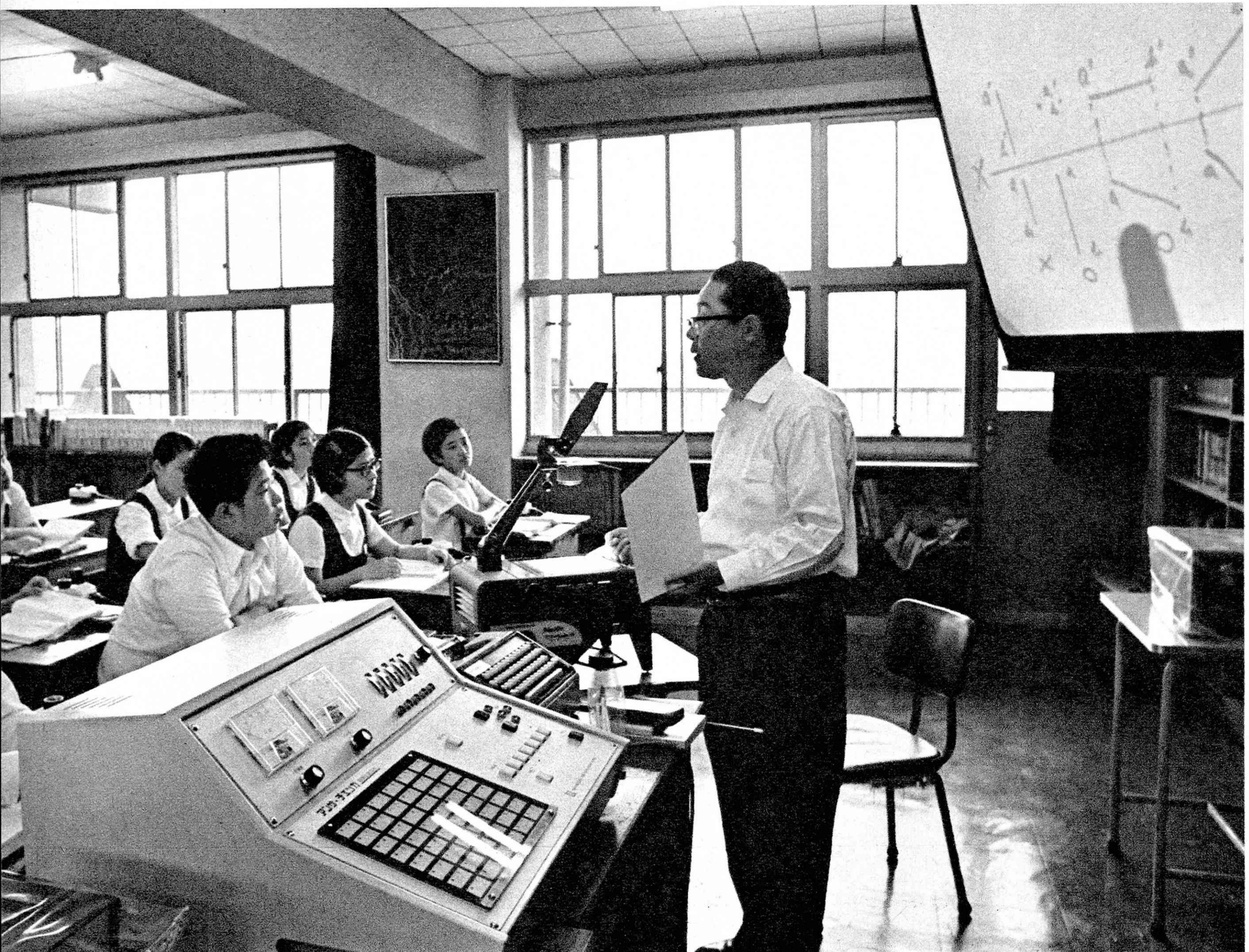
There are criticisms that the use of teaching machines dehumanizes education. But the new system has proved popular among students, who are tackling machines with great zeal. And teachers and students are eagerly adjusting themselves to the new teaching system to prepare for a fast moving era of "informationization."

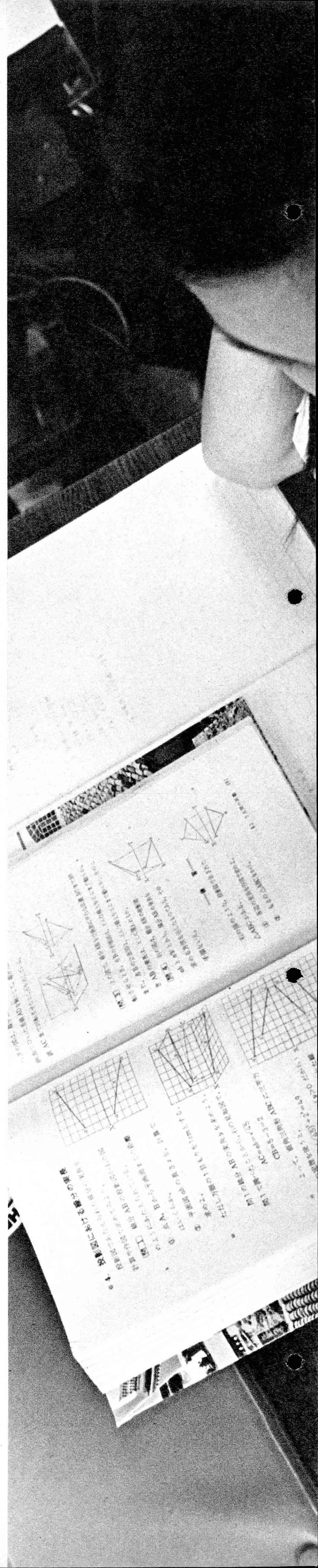


Above and right: The teachers pushes a button on the language study device and calls up a student. The specified student can answer or speak a forcign language without being heard by these nearby. In language education, the language laboratory equipment has been adopted to intensify guidance particularly on the acquisition of hearing ability. The use of headphones shuts out any distracting noise, enabling students to concentrate their attention on language study and catch the teacher's pronunciation more clearly. This has obviously heightened their interest in the study of English.




COLUMBIA C 10

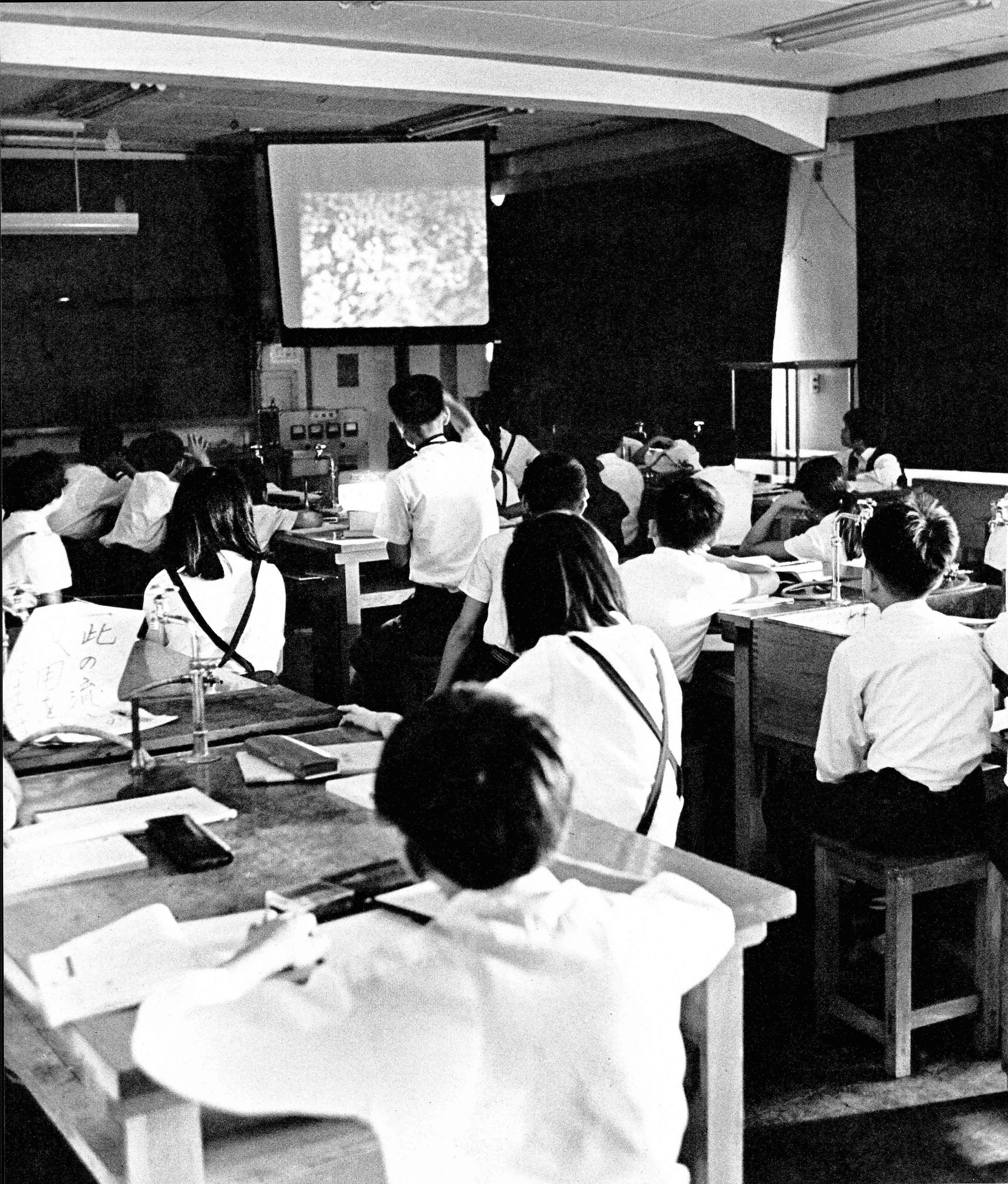




Above and right: OHP (over head projector) and analyzer are mainly used in the study of mathematical diagrams. Diagrams and symbols are written on TP (transparency) instead of on blackboard, and directly projected on a screen. This not only saves the teacher's labor, but also enables a new method of explanation, which is impossible in the case of blackboard or other conventional teaching methods. The new system ensures smooth teaching within a given time. When a student turns a dial on her desk, a lamp of the group response analyzer blinks on the teacher's desk. Thereupon, the teacher promptly knows the degree of the individual student's understanding. On this basis, the teacher chooses the next guidance pattern either for group or individualized teaching. Far rigrt: This class is studying mathematics with the aid of Synchro Fax (Sheet-type recorders). Each student chooses sheets of mathematical expressions and diagrams according to his ability and scholarship so that he can study at an appropriate pace. This teaching system represents an application of the flow chart of computer. Very suitable for individualized teaching, the system has contributed largely to enhancing learning efficiency.







Lesson in scientific experiments through the screening of 8-mm film. Other teaching machines used are VTR, slide projector and OHP, which have replaced conventional textbooks, blackboard, wall pictures and explanatory diagrams. Students say that the use of the machines has made lessons more concrete, realistic, easier to understand, and deepened their interest in the study of science.

Photographed by MASAMICHI SUMIYOSHI

Education in the 1970's (Part 2)

TEACHING DEVICES SPREADING FAST

Text By TAKESHI ADACHI
Eng. Dr., Tokyo Shibaura Electric Co., Ltd.

TWO decades and a half ago, Japan seemed to teeter on the brink of total collapse as a result of defeat in World War II. Nowadays, however, Japan's gross national product (GNP) is the third largest in the world, ranking only after the United States and the Soviet Union. Moreover, for more than 10 years, the nation's GNP has kept on growing at a ratio doubling about every five years. What then has enabled Japan, a small country lacking natural resources, to achieve such a spectacular advance? A major factor, of course, is that Japan has become a peace-loving nation dedicated wholly to growth as a modern industrial state. It must not be forgotten, however, that such growth has been supported by the tireless efforts of the well-educated, industrious 100 million people. The Japan World Exposition, Osaka (EXPO '70) under the theme of "Progress and Harmony for Mankind," which came to a successful close on September 13, was indeed a grand festival symbolic of the present-day Japan. The world's fair, joined by a total of 76 nations, was visited by upwards of 50 million persons, establishing a new record in the history of world expositions.

The Japanese people, however, are not satisfied with the scale of their GNP. For Japan still ranks as low as 16th in point of per capita national income, and moreover, it is their earnest wish to maintain and further their prosperity in a way contributory to the cause of world peace.

THE direct motive power for Japan's development lies in its industry. But it is the education of the people that nurtures the root of such motive power. In Japan, education is widespread. There are 60,759 educational institutions in the country ranging from kindergartens to universities, where a total of 1,124,000 teachers work. The number of pupils and students is put at more than 23.7 million or about 23 per cent of Japan's total population of 102.6 million.

Japan's compulsory education system consists of six-year elementary and three-year lower secondary education, and the school attendance ratio is 99.9 per cent. The country probably boasts the lowest illiterary ratio in the world. More than 80 per cent of lower secondary school graduates enter three-year upper secondary schools, while more than 50 per cent of upper secondary school graduates apply for admission to universities or junior colleges, although the actual admission ratio is 23.2 per cent. The total number of university and college students has exceeded 1.63 million. And so in recent years there has been a sharp rise in those receiving higher education than lower secondary schools.

An imbalance between sharply expanding school enrollment and the qualitative deterioration of education due to a shortage of teachers, among others, is regarded as a major cause of campus disputes.

At the moment, about 7 per cent of Japan's GNP is spent on education, including 698,000 million yen or 12.6 per cent of the national budget, and public school expenses accounting for 26.5 per cent of the local finances plus disbursements of private schools and parents. Moreover, the total expense for education has been growing faster than the nation's sharply swelling GNP.



Terminal equipment of the CAI (computer assisted instruction) system as developed by Hitachi Ltd. A student sits in front of a device, which looks like a telex machine with a TV receiver atop. He looks at a problem shown on the screen by a slide projector and answers by pushing a key of a typewriter. This system, using a small computer, is capable of teaching 50 persons at a time.

AT present, the educational system itself is being subjected to re-examination. At the same time, efforts are being made to introduce various devices into education in order to enhance efficiency by improving teaching methods. For the innovation of education is considered necessary parallel to that of technology. And to that end, three approaches are conceivable—that is, wider use of audio-visual aids, application to education of broadcasting systems, especially television and radio, and accent on individual learning to improve the quality of education.

Audio-visual aids came into wide use soon after the end of World War II. Extensively used are optical instruments, such as slide projectors, 8-mm and 16-mm films, and OHP (over head projector); audio equipment, including tape recorders, record players, audio amplifying devices and radios; and electronic image apparatus, such as television.



OHP enables the teacher to present detailed diagrams or letters, drawn on transparency, while facing students in a bright room. Therefore, it is widely used in place of the blackboard.

These machines are designed to enhance the teacher's function of transmitting information. By contrast, the "group response analyzer" is being tested to study the student's response to the teacher. In 1969, the Education Ministry leased devices of this type to 22 lower secondary schools for two-year experiments. In Gifu Prefecture, there are several lower secondary schools which are using this equipment in all classrooms under the guidance of Gifu University.

Meanwhile, the Language Laboratory (LL) system has been adopted at almost all universities and junior colleges. Under this system, pronunciations of both the teacher and the student are recorded on tape for comparison, enabling the student to practice a foreign language with great efficiency. In recent years, the system has also been spreading among lower and upper secondary schools. Japan's tape recorder production reached more than 12 million sets in 1969. Since they are priced so low that students can buy them for personal use, they are now extensively used at home for not only linguistic study but also appreciation of music.

Recently, there has appeared a tendency to combine several audio-visual aids for systematic use at schools.

In 1967, the Government decided to spend 80,000 million yen in installing standard audio-visual aids and other teaching devices at schools over a period of 10 years. In 1969, furthermore, it added another 45,000 million yen as expenses for purchase of desk-top electronic calculators and other teaching apparatus over a period of 10 years for the purpose of promoting mathematics education.

Left: A class of the PL Gakuen Middle School in Osaka, using a set of comprehensive audio-visual teaching equipment. Next page: Interior of the teaching machine operation room at the PL Gakuen Middle School. If a program for a 50-minute lesson is fed to a tape recorder in advance, a combination of teaching equipment, such as tapes, television and "document camera" (slide projector), automatically goes into action. The teacher mingles with students and conducts the lesson while answering questions.



These governmental disbursements are intended to subsidize half of the purchase price. Schools for compulsory education are mostly operated by local governments, which are to disburse the other half of the purchase price. Actually, therefore, the total public disbursements for the purpose reach twice the central Government's outlay, thus contributing largely to the spread of teaching devices.

TELEVISION is a really excellent mass communication medium utilizing the senses of sight and hearing. And it is not too much to say that man's life has undergone a drastic change since the emergence of television. Especially, Japan is one of the biggest "television countries." It ranks second only to the United States in the production of TV sets, turning out 9.2 million sets as of 1968. Moreover, Japan has even outstripped that country in the output of color TV receivers. The TV set ownership ratio of general households is as high as 69.4 per cent. Television broadcasting facilities consist of the Japan Broadcasting Corporation (NHK — a public corporation) and many commercial companies with their service areas covering 95 per cent of the country.

According to a survey by NHK, 90 per cent of the Japanese people watch television for three hours a day. And television is having a greater impact upon pupils and students. In the United States, it is said, children spend a total of 1,100 hours at schools during their 12-year education at primary schools and junior and senior high schools. During the same period, however, they spend 15,000 hours in watching television. And this is also almost true of Japanese children.

It is necessary to link television broadcasting with school education. Therefore, NHK and NET (Nippon Educational Television Co., Ltd.) are broadcasting programs for kindergartens, primary schools and lower and upper secondary schools for 33 hours and 20 minutes (six hours a day) and 12 hours and 20 minutes per week, respectively. Meanwhile, as for the TV set ownership ratio of schools, primary schools show the highest ratio of 99.2 per cent, averaging five TV sets per school as of 1968. Of late, however, there has been an increase in those schools where TV broadcasting is received at the central control room via a single antenna and then relayed via wire to receivers in all classrooms. Moreover, there are also schools which have television studios of their own for making special TV programs on their own for transmission to each classroom.

Another factor promoting the use of television at schools is the development and spread of VTR (video tape recorders). Japanese-developed VTR's are priced at between 200,000 to 400,000 yen, enabling primary schools to purchase them. Moreover, many VTR makers, such as Tokyo Shibaura Electric (Toshiba), Sony and Matsushita Electric Industrial, have adopted unified standards for their products to ensure the interchangeability of tapes. This has also contributed to the rapid spread of VTR's. The VTR is used to record broadcast programs, or the schools' own programs for later transmission to classrooms in accordance with their timetables, further widening the scope of television.

Now that the number of university students has increased sharply, it is no longer uncommon to accommodate as many as several hundred—or even several thousand—students in a single giant classroom. In such a classroom, many loud speakers and television sets are installed. And the professor's face, experimental equipment on his desk, and information by diagrams and letters are caught by "instructional television" (ITV) camera for screening on the many TV receivers. At

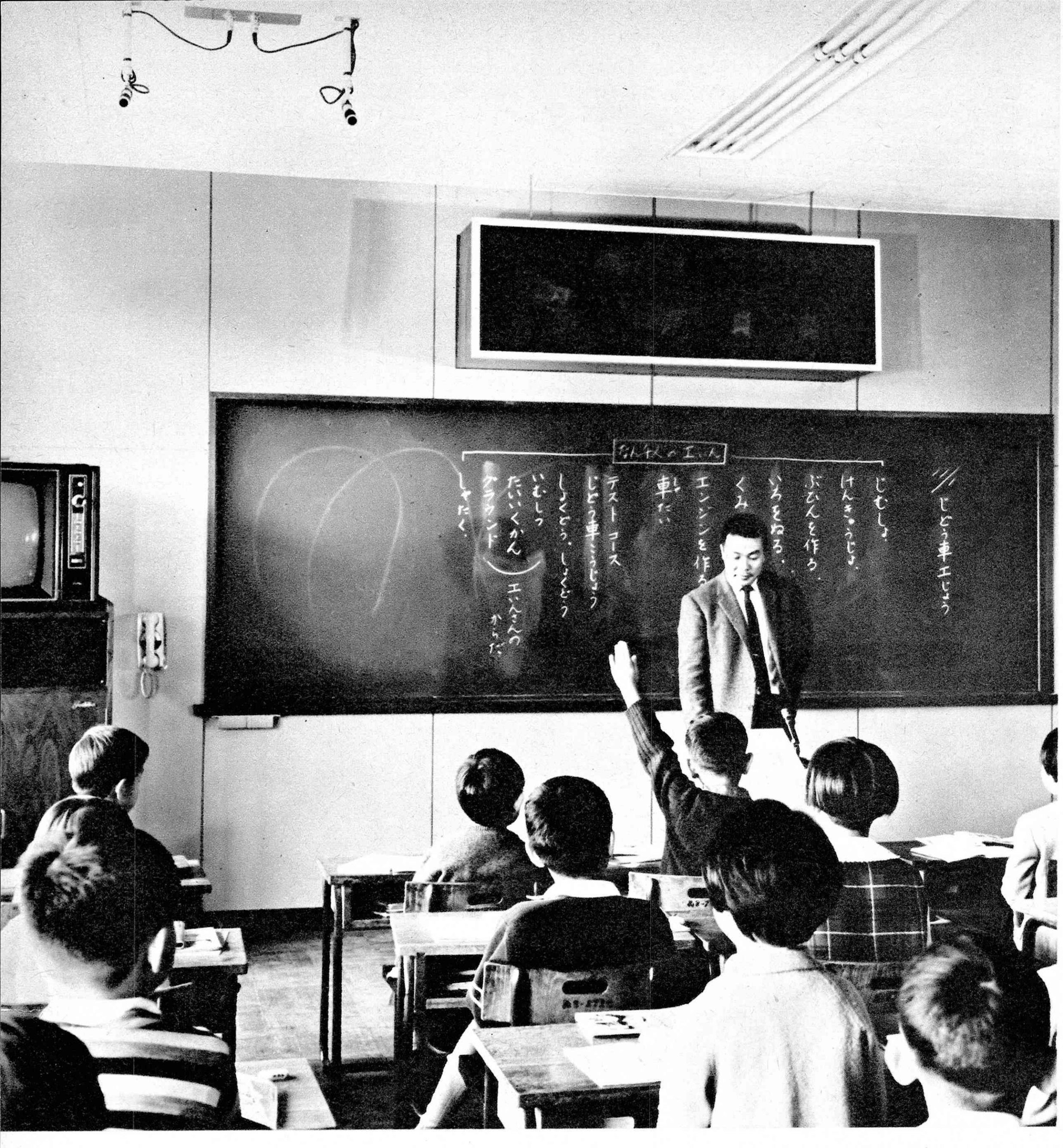
several universities, moreover, the telecast image is projected by such devices as Idphor.

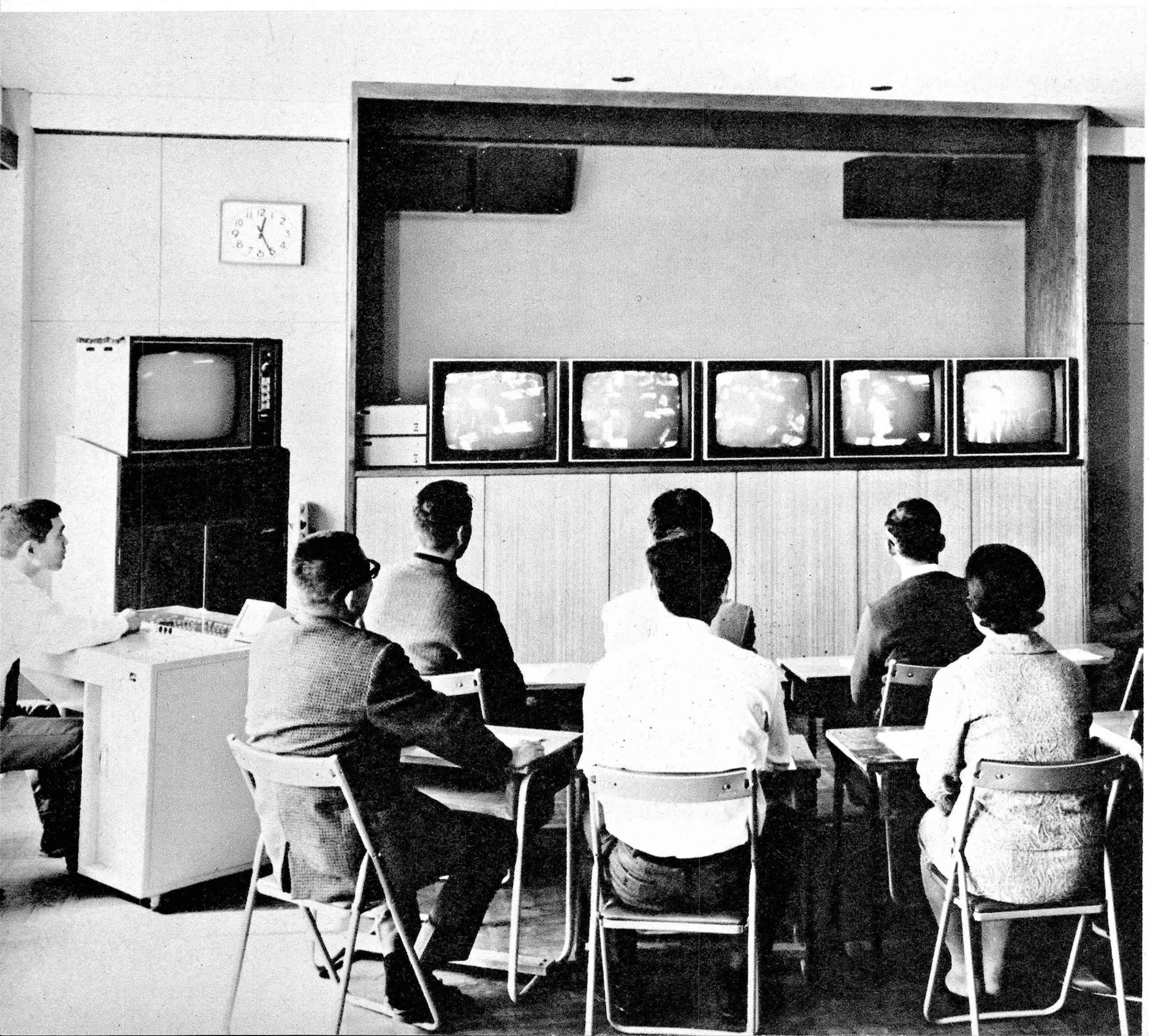
Now under study is a project for a "university of the air" system, whereby almost all lectures at the university are telecast to students studying at homes. The students have only to go to the university for about 20 days of schooling a year and receive diplomas by obtaining a specified number of credits. This plan is expected to become a reality by 1972.

ANCIENT people traveled on foot. But the invention of the railroad made it possible to transport large numbers of people to distant places at high speed. In recent times, automobiles have developed fast, since they are more convenient for individuals to reach their different destinations at high speed. In the field of education as well, modern schools have developed from ancient, small private schools, called "terakoya," enabling all of the Japanese people to receive education and thus bringing a quantitative expansion of education to a marked extent. Nowadays, emphasis has come to be placed on making individuals bring their ability and aptitude into full play through proper learning. But there is a contradiction between such individualized education and the education of many students through a limited number of teachers. And this is a problem requiring urgent solution.

At Japanese schools, each class is made up of scores of students for group education, and teachers are striving to promote individual guidance within this framework.

Some schools have adopted "program textbooks" or teaching machines, including "Synchrofax" and "Personal Trainer." Meanwhile, Computer Assisted Instruction (CAI), a teaching machine using a computer, is now expected upon to resolve the above-mentioned contradiction.

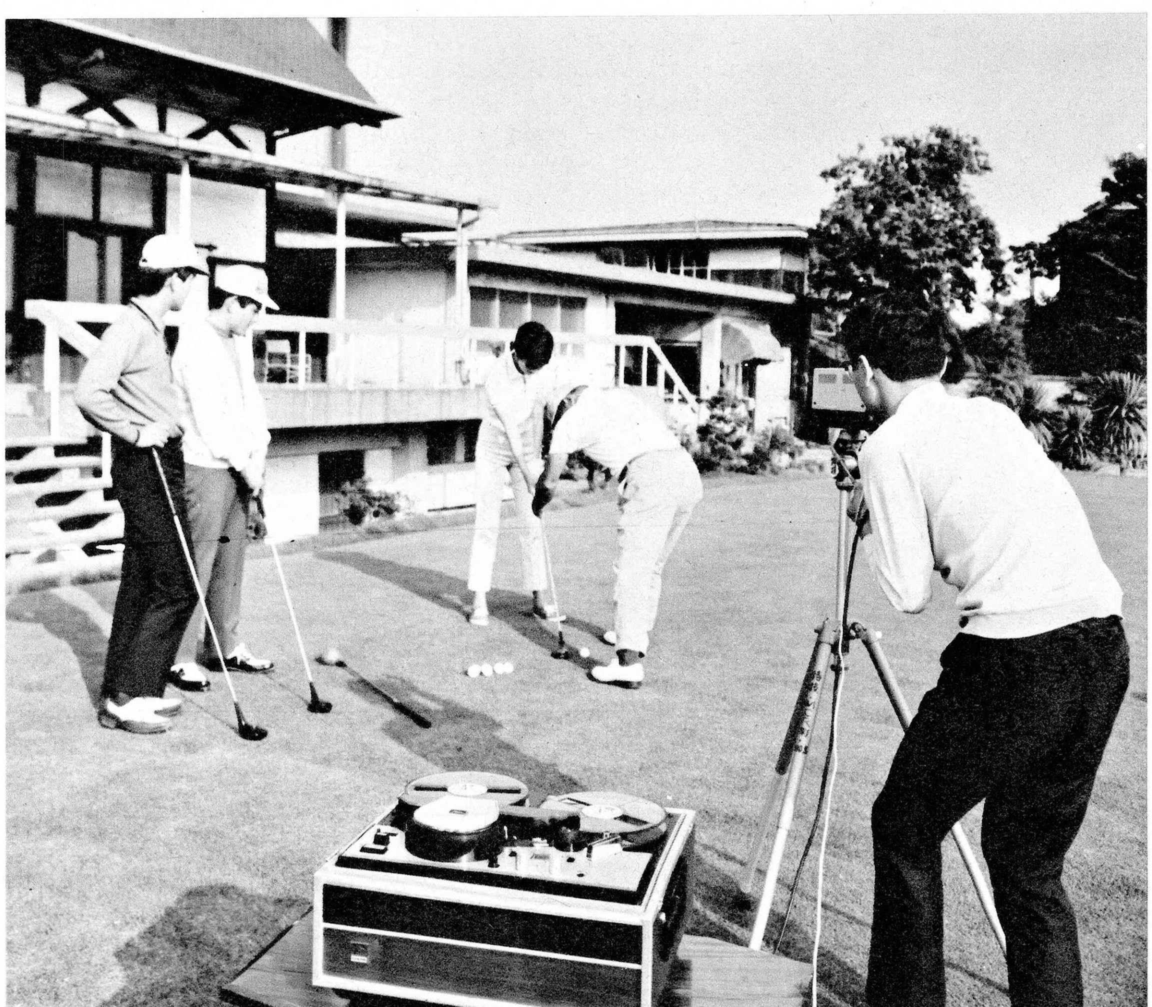




Above and Left: Four TV cameras are installed on the top of the blackboard. Classroom scene is transmitted to TV receivers in other classrooms so that teachers and students' parents may observe the atmosphere of the class.

AS of September 1969, a total of 6,718 computers were in operation in Japan. Thus in the use of computers, the nation ranked next only to the U.S. Moreover, Japanese-made machines accounted for 54 per cent of the total. At present, there are about 90 computers installed at schools, which are for the most part used for scientific calculation at universities. There is a system whereby the nation is divided into seven districts and in each one, a large-sized computer is installed at a university for joint use by other universities in the same district. Meanwhile, as large numbers of persons apply for admission to private universities, there have been increasing cases of using computers for compiling the results of entrance examinations. In the past two or three years, attention has been focussed CAI, which adjusts education to each individual's ability and aptitude with the aid of a computer, and the Computer Managed Instruction system (CMI), mainly designed for the teacher to make teaching materials suitable for the pupils' ability. Research projects on these systems are being conducted by the Center for Ability Development Engineering, while computer makers are also cooperating in projects for the application of such systems to individual enterprises. A mood for study of the systems is also mounting among schools. In Tokyo, an international seminar on the use of computers for education was held July 6-11 this year under the joint auspices of the Japanese Government, centering on the Education Ministry, and the Organization for Economic Cooperation and Development (OECD). On that occasion, five experts from the U.S., Britain and France and 24 specialists from the Japanese Government, universities, research institutes and private enterprises assembled mainly to make reports and hold a debate on CAI and CMI. And this seminar is expected to serve as an added stimulus for the promotion of computer use in Japanese education.





Above: Television studio set up in a primary school. The operation of equipment and preparation of TV programs are almost entirely entrusted to pupils. TV programs prepared in this studio are transmitted to a TV receiver in each classroom. Right: Golfing practice is taped with VTR by using an industrial television camera. VTR is used not only in the field of sports, but also as a teaching machine in classrooms for science and other lessons.

PUMPED-STORAGE POWER STATIONS IN JAPAN

In recent years, electric power consumption in Japan has been soaring fast parallel to the phenomenal growth of national economy. In fiscal 1969, Japan's total power demand reached 231,300 million kilowatt-hours. Moreover, the demand is expected to climb by about 12 per cent annually in the years ahead (according to a survey by the Electric Industry Association).

To meet such a sharp uptrend of power consumption as well as the need for cost reduction, the electric power industry has adopted a policy of relying on large-capacity thermal power stations and atomic power plants for basic power supplies and using water power stations for additional supplies during peak hours. In this connection, water power generation by the pumped-storage system has now come into the limelight as a massive supply source for peak hours.

Under this system, surplus electricity of thermal and atomic power stations during the night or on holidays is used to pump up water from a lower to an upper reservoir. During the daytime peak hours, the water is discharged to fall into the lower reservoir in order to generate electricity. This ensures highly efficient operation of thermal and atomic power stations.

This year, two pumped-storage power stations have so far been completed—that is, the Shinnariwagawa Power Station (output: 303,000 kilowatts) of the Chugoku Electric Power Co. and the 1st Takane Power Station (340,000 kilowatts) of the Chubu Electric Power Co. In addition, partial operation has begun at the Azumi Power Station (623,000 kilowatts) and the Midono Power Station (245,000 kilowatts) of the Tokyo Electric Power Co. Besides these two or three power plants of this type are now under construction. Current plans call for the start of construction work on similar power stations at 11 places from fiscal 1970 to 1977.

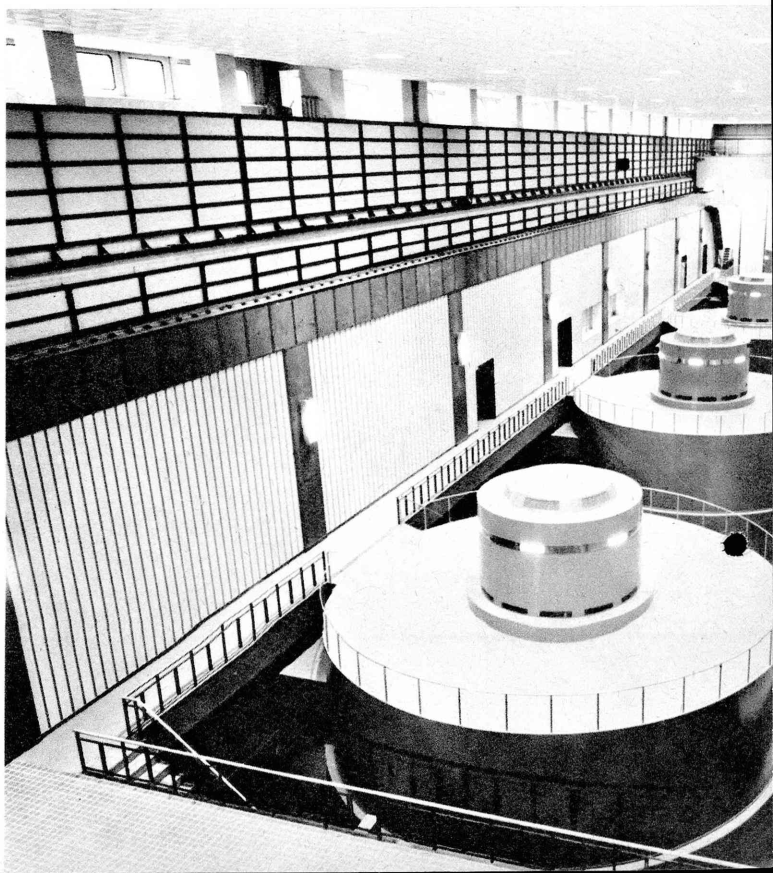
All of these power stations are characterized by large capacity and big head. For instance, the Numappara Power Station of the Electric Power Development Co., which started building recently, is the world's first large-capacity pumped-storage power plant with a head of more than 500 meters (maximum output: 675,000 kilowatts and head: 528 meters).



Tokyo Electric Power Co. has built three pumped-storage power stations under its program for hydroelectric power development of the Azusa River in Nagano Prefecture. The river runs through the Northern Japan Alps noted for heavy snow and the basin of the river forms the scenic Kamikochi district, including the ravines of the Japan Alps ranges. The rapid stream of abundant water has long since attracted attention as a treasure house of hydroelectric power. The aerial photo shows three dams as viewed from the direction of Azusa River's upper reaches.





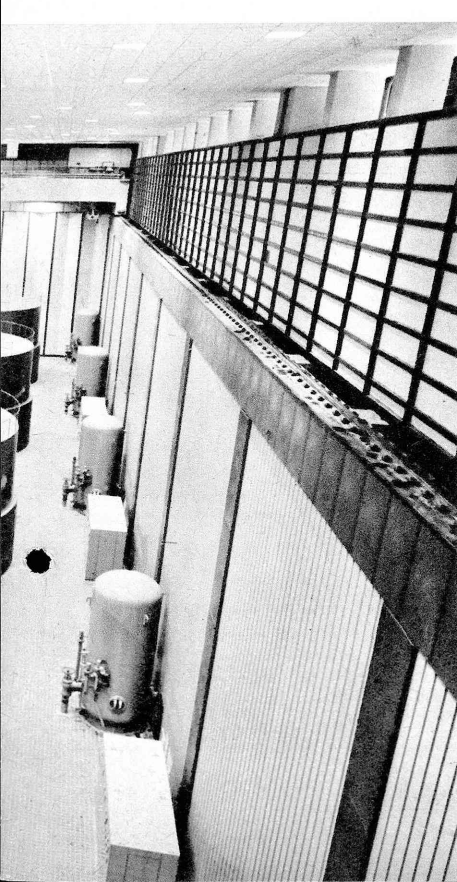


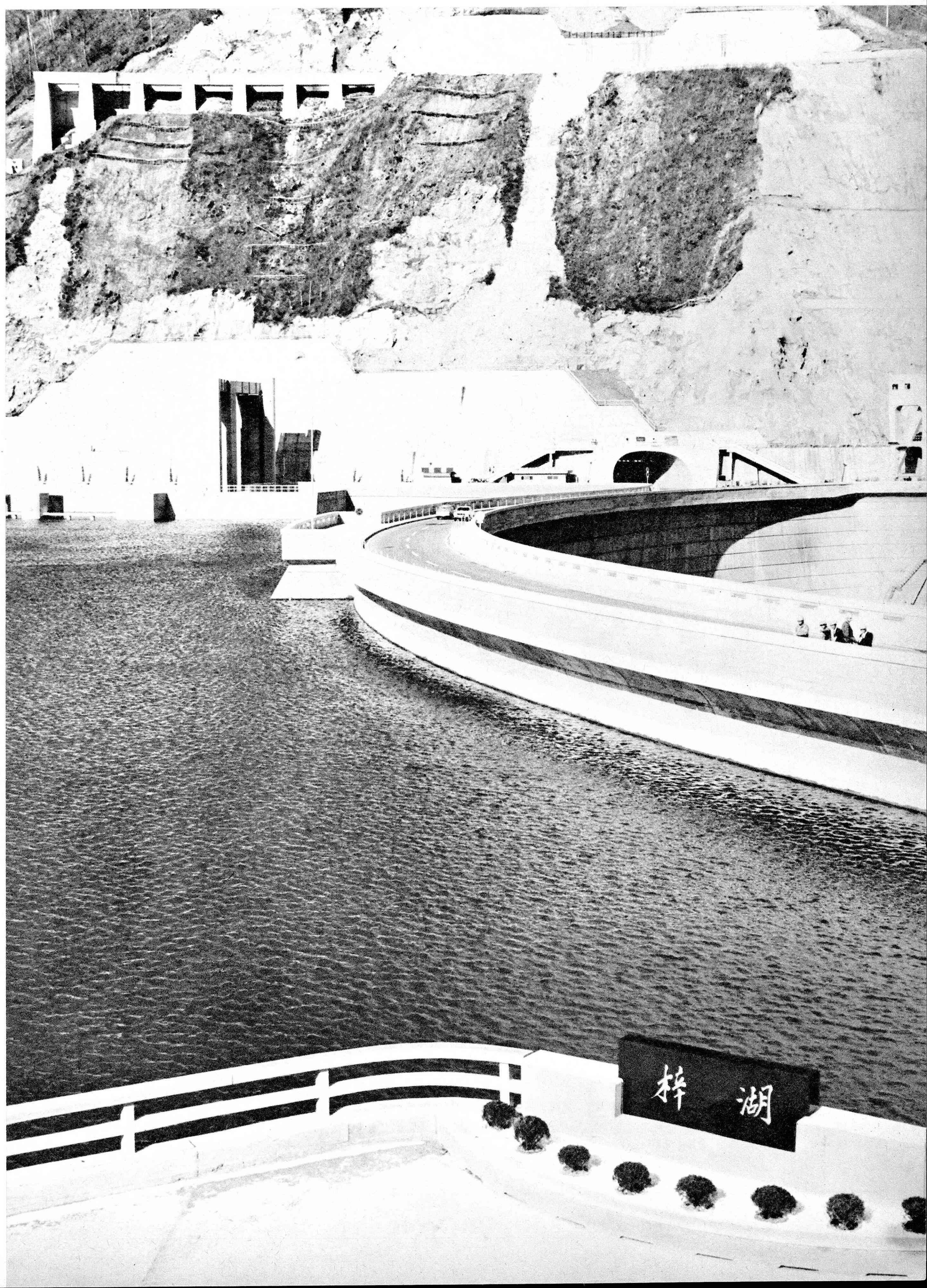
Indications are that in the future, economically convenient places for water power generation will decline sharply, while it would also become difficult to find proper sites for thermal power plants because of widespread anxiety over environmental pollution. In these circumstances, the idea of building sea water pumped-storage power stations has recently come to the fore, since Japan, nation surrounded by the sea, can count on an inexhaustible supply of sea water.

The successive construction of pumped-storage power stations and the plans for pumping up sea water, both designed to fully satisfy Japan's power needs now swelling at an unexpectedly fast pace, are also expected to play a great part in the further development of Japanese industry as the best means of adjusting power supply during the peak hours of power consumption.



Left: Midono Dam, one of the three dams for the hydroelectric power development project of the Azusa River. (The two others are Nagawado Dam and Inekoki Dam.) These dams are also useful for flood control, and the stocked water has been used to create vast areas of farm land. Below left: Four generators installed at the Azumi Power Station in the upper reaches of the river. Below: Artificial lake created by the construction of a giant arch dam mirrors a magnificent landscale of Mother Nature. It is engaging attention as a new oasis of beauty for tourists.







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